

Energy meters

EM3100 / EM3200 / EM3300 / EM3400 / EM3700 series

User Manual

7EN02-0495-01

12/2024



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Safety information

Important information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that accompany this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

Failure to follow these instructions will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please note

Electrical equipment should be installed, operated, serviced, and maintained in restricted access locations only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this equipment. A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Notices

FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user is cautioned that any changes or modifications not expressly approved by Schneider Electric could void the user's authority to operate the equipment.

This digital apparatus complies with CAN ICES-3 (B) /NMB-3(B).

About this manual

This manual describes features of the EM3100 / EM3200 / EM3300 / EM3400 / EM3700 series energy meters and is intended for use by designers, system builders and maintenance technicians with an understanding of electrical distribution systems and monitoring devices.

Document scope

Throughout the manual, the term “meter / device” refers to all models of the EM3100 / EM3200 / EM3300 / EM3400 / EM3700 series. All differences between the models, such as a feature specific to one model, are indicated with the appropriate model number or description.

This manual does not provide configuration information for advanced features where an expert user would perform advanced configuration. It also does not include instructions on how to incorporate meter data or perform meter configuration using energy management systems or software, other than ION Setup. ION Setup is a free configuration tool available for download from www.se.com.

Related documents

Instruction Sheet	Number
EM3122 instruction sheet	BRU19330 / BRU19371
EM3212 / EM3224 instruction sheets	BRU19337 / BRU19377
EM3322 instruction sheet	BRU19338 / BRU19379
EM3412 / EM3424 instruction sheet	BRU19339 / BRU19380
EM3712 / EM3724 instruction sheet	BRU19342 / BRU19381

You can download these technical publications and other technical information from www.se.com.

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Safety precautions

Installation, wiring, testing and service must be performed in accordance with all local and national electrical codes.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate Personal Protective Equipment (PPE) and follow safe electrical work practices. See NFPA 70E, CSA Z462 or other local standards.
- Turn off all power supplying this device and the equipment in which it is installed before working on or in the equipment.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Assume communications and I/O wiring are hazardous live until determined otherwise.
- Do not exceed the maximum ratings of this device.
- Do not short secondary terminals of Voltage Transformer (VT).
- Do not open secondary terminals of Current Transformer (CT).
- Ground secondary circuit of CTs.
- Do not use the data from the meter to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.
- Do not install CTs or LPCTs in equipment where they exceed 75% of the wiring space of any cross-sectional area in the equipment.
- Do not install CTs or LPCTs in areas where ventilation openings may be blocked or in areas of breaker arc venting.
- Secure CT or LPCT secondary conductors to ensure they do not contact live circuits.
- Do not mount the meter within 2 in (50.8 mm) of any live circuits including the primary conductors, primary terminals and primary lugs.
- Do not use water or any liquid material to clean the product. Use a cleaning cloth to remove dirt. If dirt cannot be removed, contact local Technical Support representative.
- Before installation, verify the rating and the characteristics of the supply side over current protection devices. Do not exceed the maximum current or voltage rating of the meter.

Failure to follow these instructions will result in death or serious injury.

NOTE: See IEC 60950-1, Annex W for more information on communications and I/O wiring connected to multiple devices.

WARNING

UNINTENDED OPERATION

Do not use this device for critical control or protection of persons, animals, property or equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING**INACCURATE DATA RESULTS**

- Do not rely solely on data displayed on the display or in software to determine if this device is functioning correctly or complying with all applicable standards.
- Do not use data displayed on the display or in software as a substitute for proper workplace practices or equipment maintenance.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Meter overview

Overview of meter functions

The meters provide the essential measurement capabilities (for example, Active Total Energy and Active Per phase Energy) required to monitor a 1-phase or 3-phase electrical installation.

The key features of the meters are:

- Measurement of active energy
- MID/MIR compliance for many of the meters
- Pulse outputs
- Display (Energy measurements)
- Communications using Modbus

Main characteristics

EM3100 series: 45 A meters

Function		EM3122
Direct measurement (up to 45 A)		√
Active Energy measurement accuracy class (total and partial kWh)		Class 1
Measurement display (number of lines)		3 Lines
Communications	Modbus	√
Width (18 mm module in DIN rail mounting)		5

EM3200 series: 63 A meters

Function		EM3212	EM3224
Direct measurement (up to 63 A)		√	√
Active Energy measurement accuracy class (total and partial kWh)		Class 1	Class 1
Measurement display (number of lines)		3 Lines	3 Lines
Pulse output only		√	—
Communications	Modbus	—	√
MID/MIR compliant		—	√
Width (18 mm module in DIN rail mounting)		5	5

EM3300 series: 100 A meters

Function		EM3322
Direct measurement (up to 100 A)		√
Active Energy measurement accuracy class (total and partial kWh)		Class 1
Measurement display (number of lines)		3 Lines
Communications	Modbus	√
Width (18 mm module in DIN rail mounting)		7

EM3400 series: 125 A meters

Function		EM3412	EM3424
Direct measurement (up to 125 A)		√	√
Active Energy measurement accuracy class (total and partial kWh)		Class 1	Class 1
Measurement display (number of lines)		3 Lines	3 Lines
Pulse output only		√	—
Communications	Modbus	—	√
MID/MIR compliant		—	√
Width (18 mm module in DIN rail mounting)		7	7

EM3700 series: 1 A / 5 A meters

Function		EM3712	EM3724
Measurement inputs through CTs (1 A, 5 A)		√	√
Measurement inputs through VTs		√	√
1 A: Active Energy measurement accuracy class (total and partial kWh)		Class 1	Class 1
5 A: Active Energy measurement accuracy class (total and partial kWh)		Class 0.5S	Class 0.5S
Measurement display (number of lines)		3 Lines	3 Lines
Pulse output only		√	—
Overload alarm		√	√
Communications	Modbus	—	√
MID/MIR compliant		—	√
Width (18 mm module in DIN rail mounting)		5	5

Functions

These meters can monitor energy consumption by usage, by zone or by feeder in the cabinet. They can be used to monitor feeders in a main switchboard or to monitor the main in a distribution cabinet.

EM3100 / EM3200 / EM3300 and EM3400 series

Functions	Advantages
Can directly measure feeders up to: EM3100 series: 45 A EM3200 series: 63 A EM3300 series: 100 A EM3400 series: 125 A Embedded current transformers (CTs)	Saves installation time and space in the cabinet Clear distribution network
Adapted to be installed with Acti9 iC60 (EM3100 / EM3200 series) or Acti9 C120, NG125 (EM3300 / EM3400 series) circuit breakers	Can be used in 3-phase systems with or without neutral
Can be used for single-phase multi-circuit monitoring	3 single feeders can be monitored with a single meter

EM3700 series

Functions	Advantages
CT and VT connection	Can be used in low voltage applications
Flexible configuration	Can be adapted to any distribution network with or without neutral

Typical applications

The following table presents some of the functions of the different meters, the advantages and main applications.

Functions	Advantages	Applications	Meter
Total and partial energy counters	Energy usage monitoring	Sub-billing management Metering applications	EM3100 / EM3200 / EM3300 / EM3400 / EM3700 series
Internal clock	Saves the date and time of last reset	Provides the timestamp of the last reset of the partial energy accumulation	EM3224 / EM3424 / EM3724
Pulse output with a configurable pulse weight of up to 1 pulse per 1 Wh	Collect pulses from the meter with a Smartlink system, PLC or any basic acquisition system	Remote monitoring of energy consumption Integrate the meter in to a system monitoring of a large number of devices	EM3212 / EM3412 / EM3712
Modbus communications	Communicate advanced parameters using Modbus protocol	Modbus network integration	EM3122 / EM3224 / EM3322 / EM3424 / EM3724
Measurement of active energy	Allows you to monitor energy consumption and production	Manage energy consumption and make informed investment to reduce your energy bill or penalties	EM3100 / EM3200 / EM3300 / EM3400 / EM3700 series

Hardware and installation

Safety precautions

Installation, wiring, testing and service must be performed in accordance with all local and national electrical codes.

DANGER

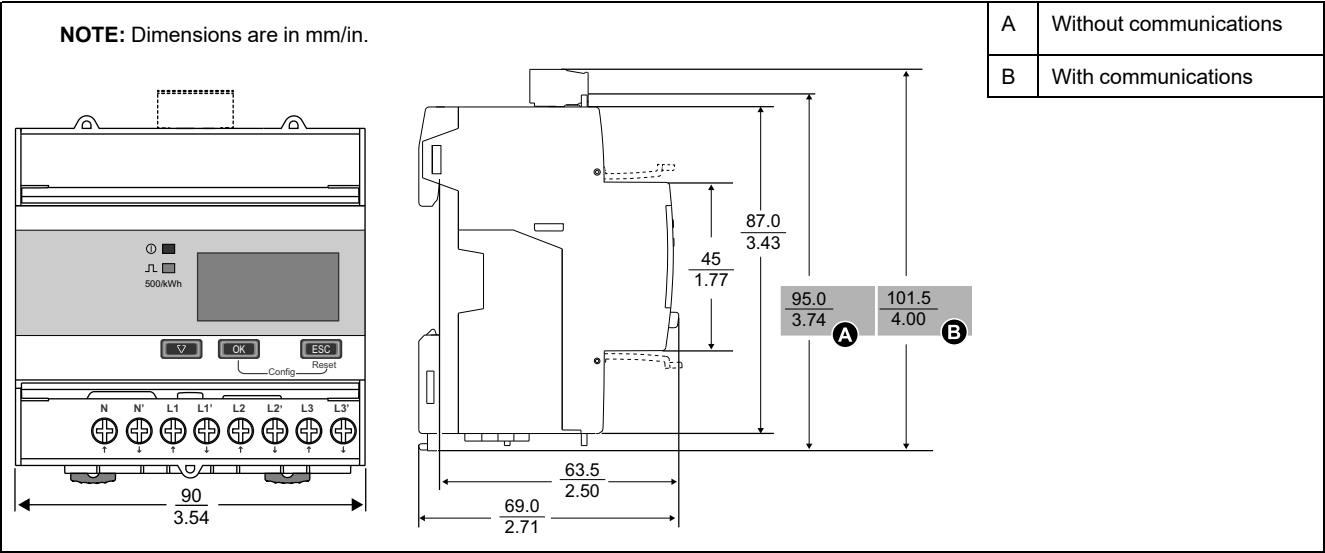
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate Personal Protective Equipment (PPE) and follow safe electrical work practices. See NFPA 70E, CSA Z462 or other local standards.
- Turn off all power supplying this device and the equipment in which it is installed before working on or in the equipment.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.
- Do not exceed the maximum ratings of this device.
- Do not touch the current terminal when the meter is energized.

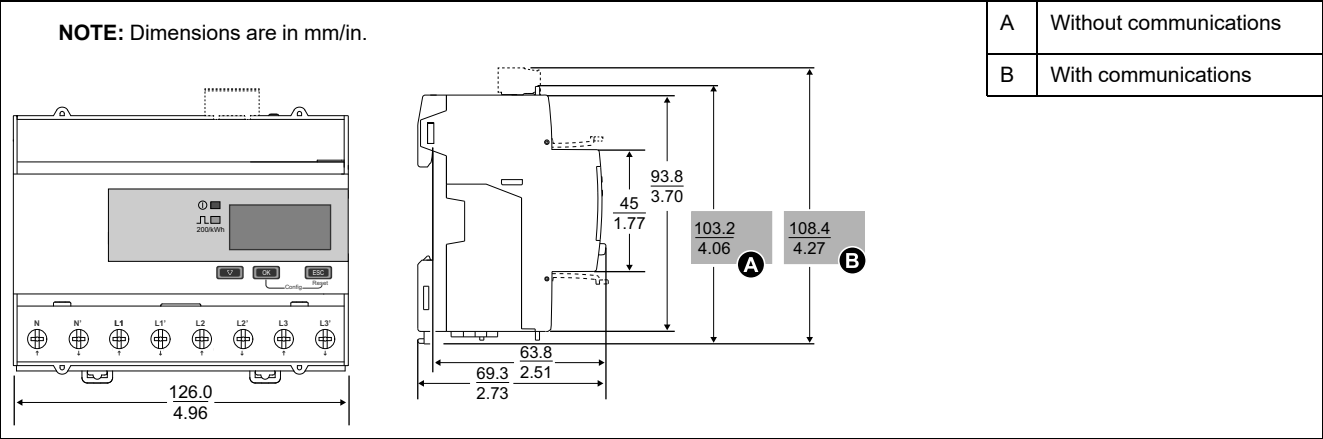
Failure to follow these instructions will result in death or serious injury.

Dimensions

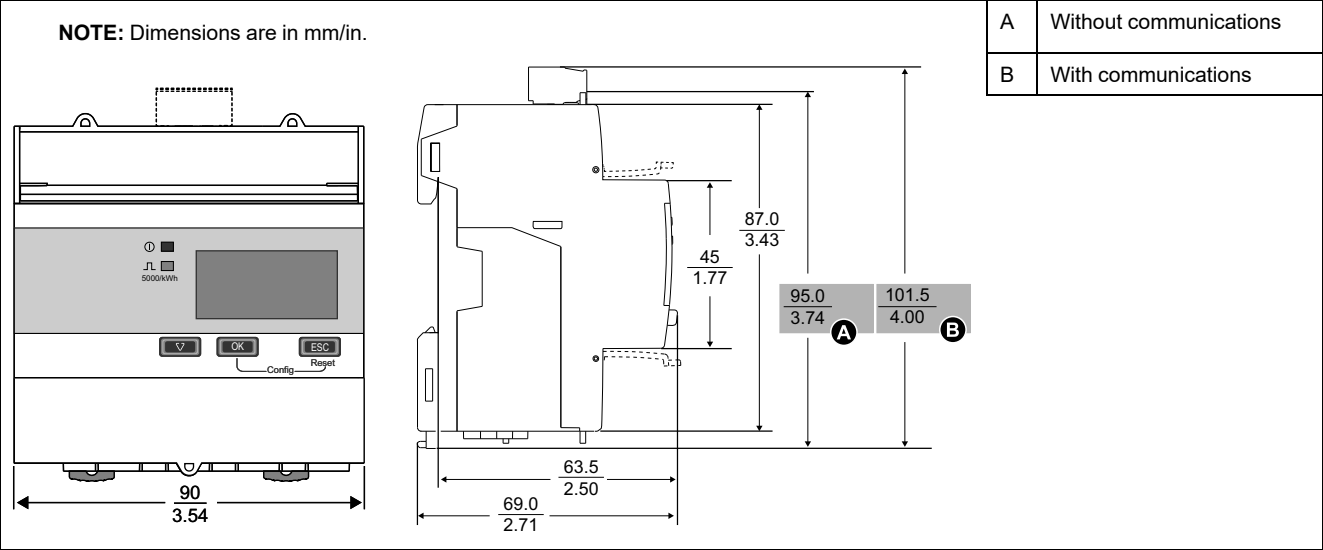
EM3100 / EM3200 series



EM3300 / EM3400 series



EM3700 series



Meter description

Meter overview: EM3100 series

EM3122

A: Modbus communication port

B: Modbus communication LED

C: Display with white backlight for measurement and configuration

D: Scroll through screens or a list of options

E: Confirm entry or access more screens

F: Cancel and go back to previous screen

G: L1, L2, L3, N

H: Energy pulse LED

I: Status LED: on / off / error

J: Sealing points (3)

K: Sealable covers (2)

EM3122

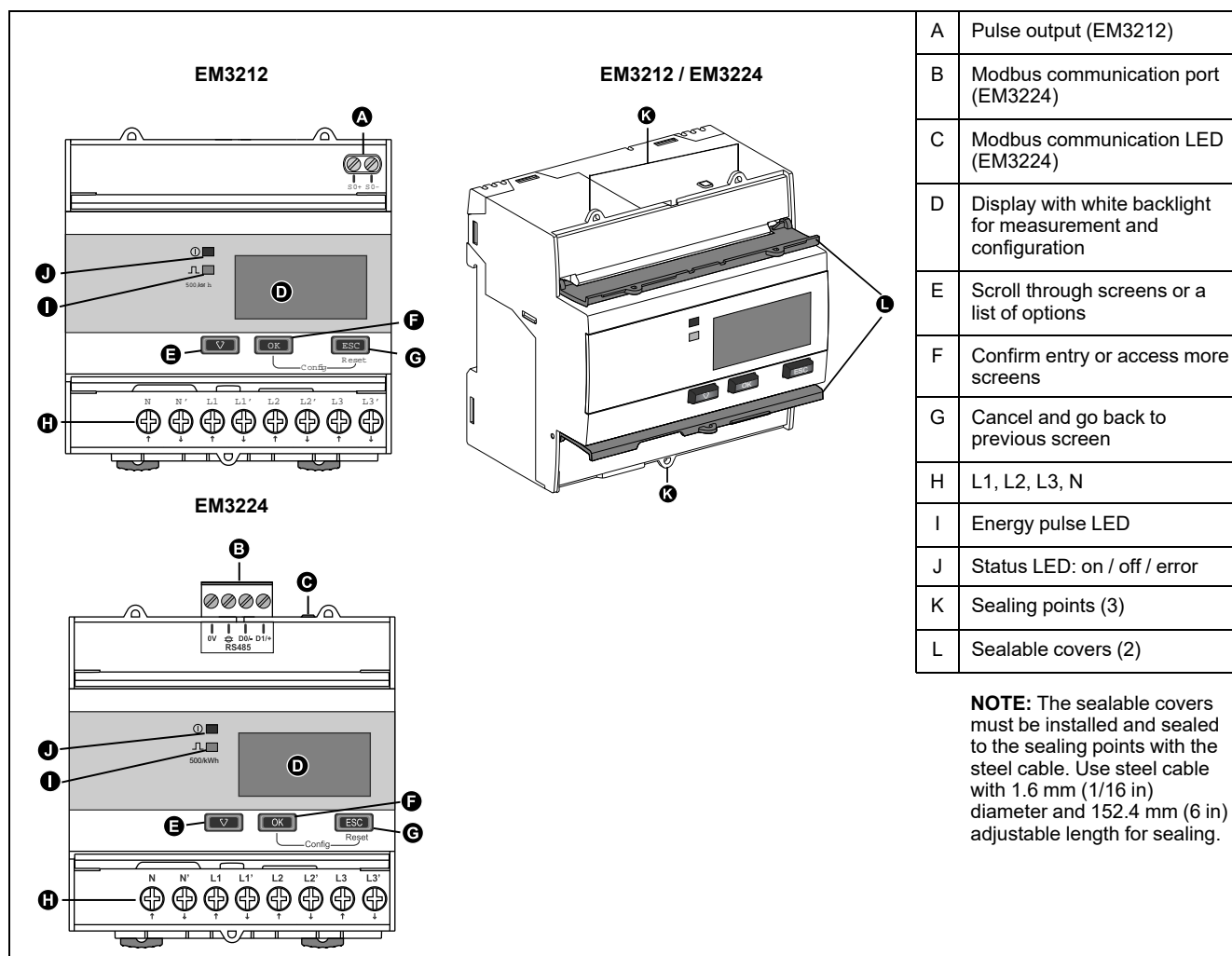
J: Sealing points (3)

K: Sealable covers (2)

A	Modbus communication port
B	Modbus communication LED
C	Display with white backlight for measurement and configuration
D	Scroll through screens or a list of options
E	Confirm entry or access more screens
F	Cancel and go back to previous screen
G	L1, L2, L3, N
H	Energy pulse LED
I	Status LED: on / off / error
J	Sealing points (3)
K	Sealable covers (2)

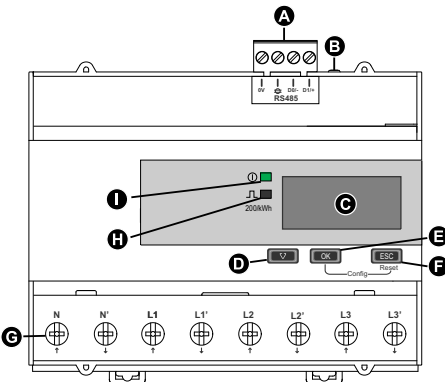
NOTE: The sealable covers must be installed and sealed to the sealing points with the steel cable. Use steel cable with 1.6 mm (1/16 in) diameter and 152.4 mm (6 in) adjustable length for sealing.

Meter overview: EM3200 series

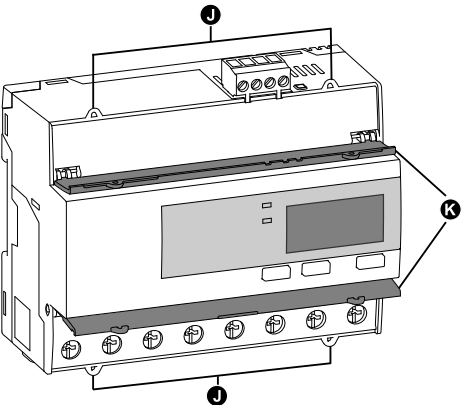


Meter overview: EM3300 series

EM3322



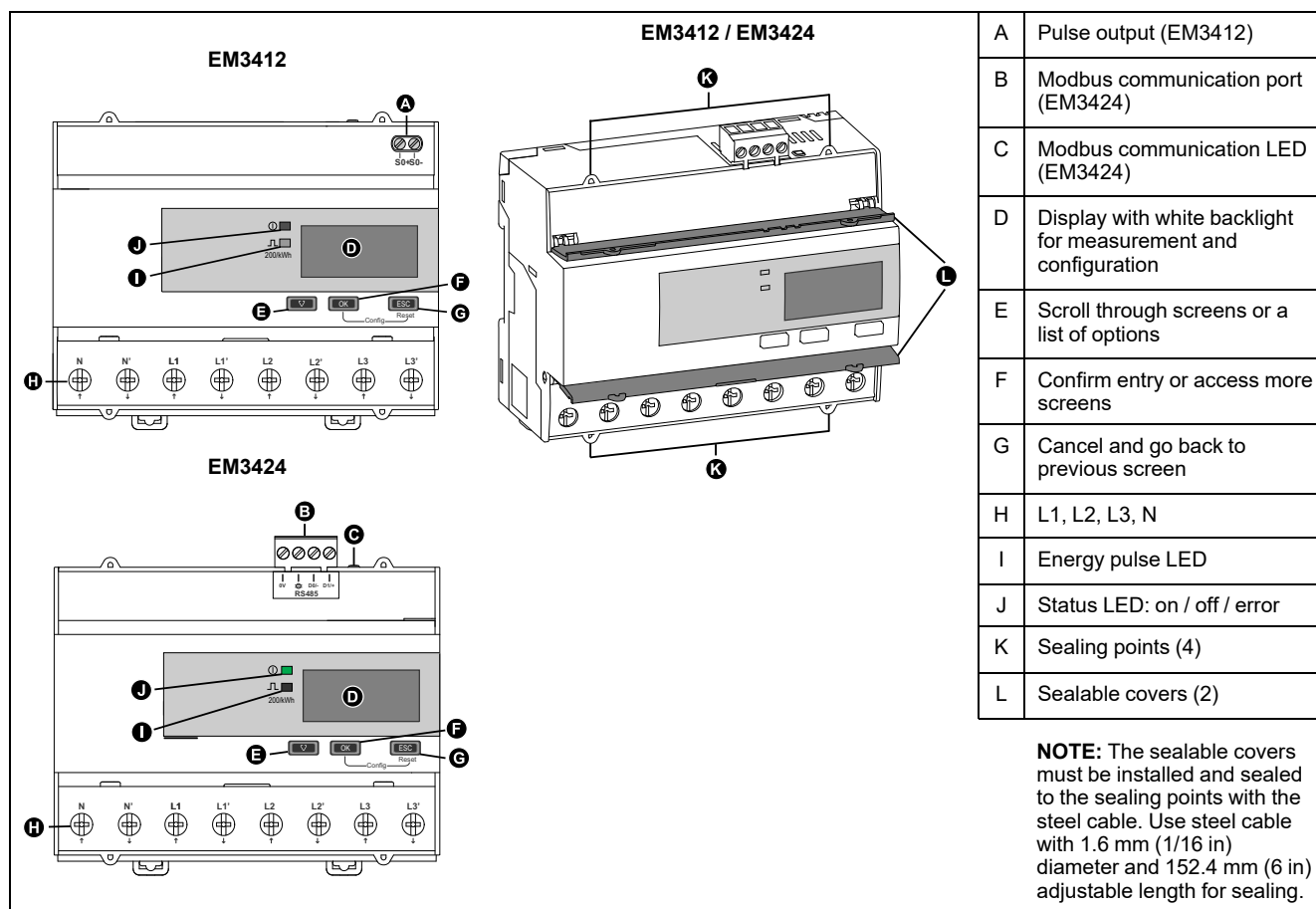
EM3322



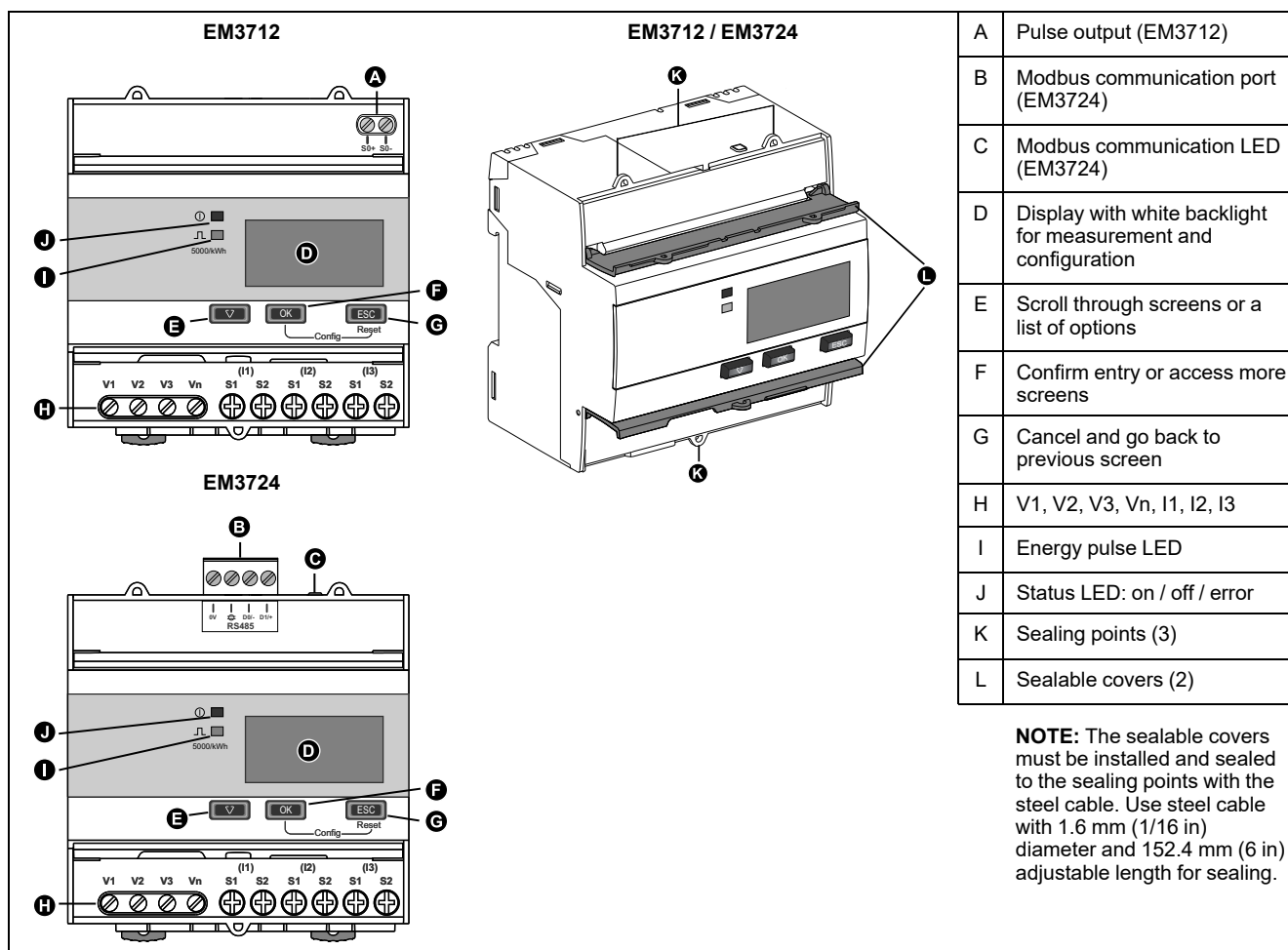
A	Modbus communication port
B	Modbus communication LED
C	Display with white backlight for measurement and configuration
D	Scroll through screens or a list of options
E	Confirm entry or access more screens
F	Cancel and go back to previous screen
G	L1, L2, L3, N
H	Energy pulse LED
I	Status LED: on / off / error
J	Sealing points (4)
K	Sealable covers (2)

NOTE: The sealable covers must be installed and sealed to the sealing points with the steel cable. Use steel cable with 1.6 mm (1/16 in) diameter and 152.4 mm (6 in) adjustable length for sealing.

Meter overview: EM3400 series



Meter overview: EM3700 series



Wiring

Power system wiring: EM3100 / EM3200 / EM3300 / EM3400 series

⚠️ DANGER

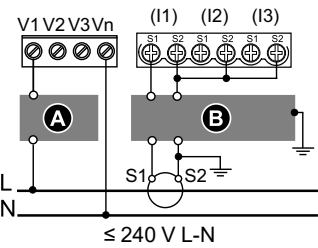
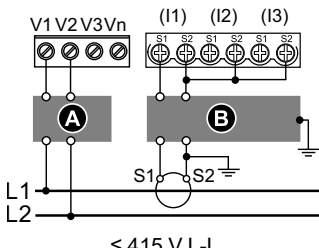
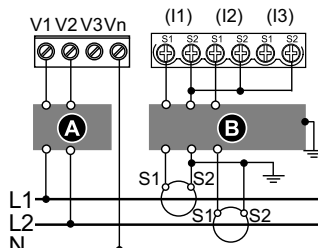
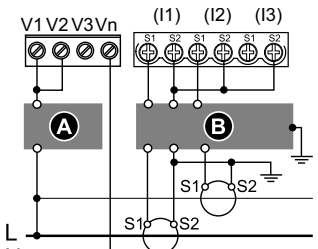
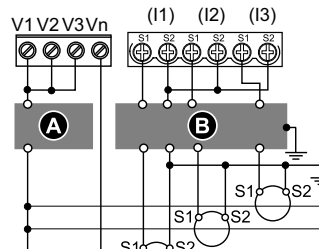
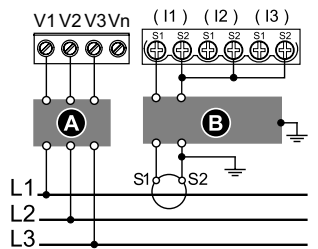
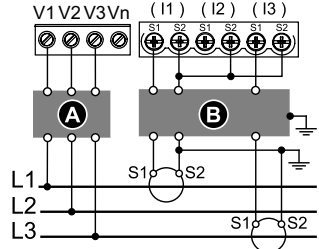
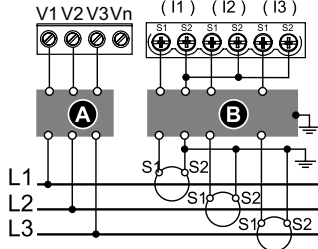
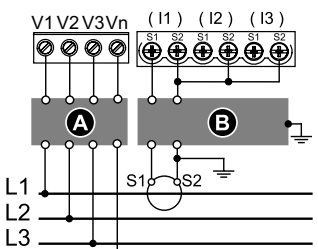
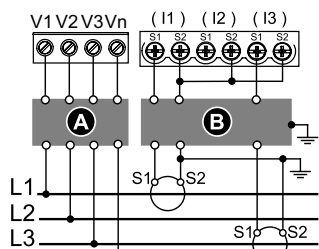
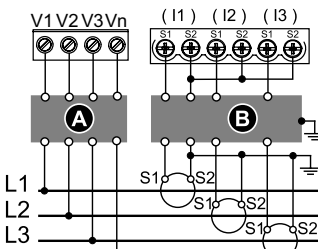
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

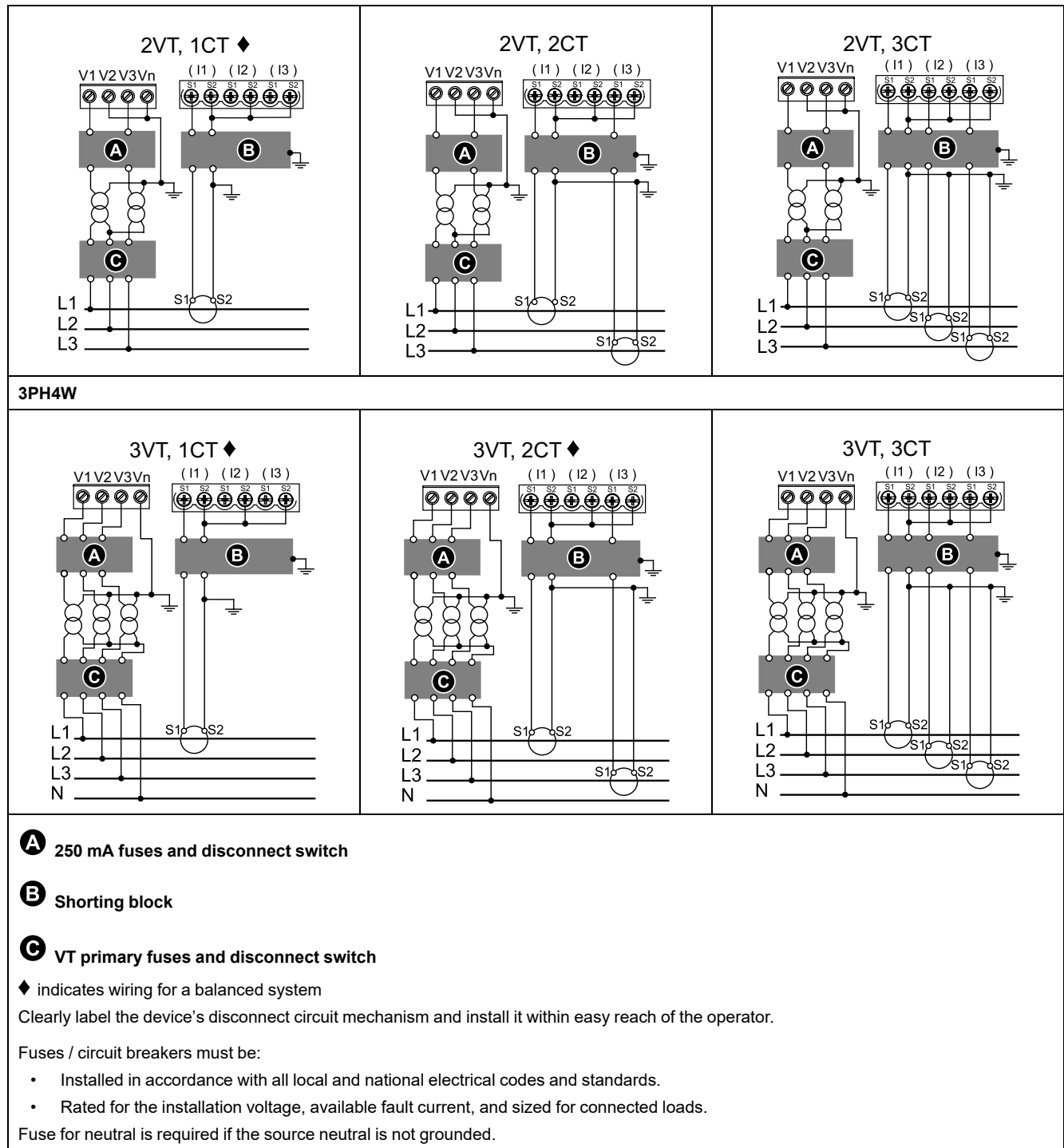
Do not connect N' to the load when setting the wiring type on the meter to 1PH4W Multi L-N.

Failure to follow these instructions will result in death or serious injury.

<p>1PH2W LN</p> <p>≤ 240 V L-N</p>	<p>1PH2W LL</p> <p>≤ 415 V L-L</p>	<p>1PH3W LLN</p> <p>≤ 240 V L-N ≤ 480 V L-L</p>
<p>1PH multiple load with N</p>	<p>3PH3W</p> <p>≤ 480 V L-L</p>	<p>3PH4W</p> <p>≤ 240 V L-N ≤ 480 V L-L</p>
<p>A Fuses and disconnect switch</p> <p>Clearly label the device's disconnect circuit mechanism and install it within easy reach of the operator.</p> <p>Fuses / circuit breakers must be:</p> <ul style="list-style-type: none"> Installed in accordance with all local and national electrical codes and standards. Rated for the installation voltage, available fault current, and sized for connected loads. <p>Fuse for neutral is required if the source neutral is not grounded.</p>		

Power system wiring: EM3700 series

1PH		
<div><p>1PH2W L-N</p><p>≤ 240 V L-N</p></div>	<div><p>1PH2W L-L</p><p>≤ 415 V L-L</p></div>	<div><p>1PH3W L-L-N</p><p>≤ 240 V L-N ≤ 480 V L-L</p></div>
<div><p>1PH4W multi L-N 2CT</p><p>≤ 240 V L-N</p></div>	<div><p>1PH4W multi L-N 3CT</p><p>≤ 240 V L-N</p></div>	
3PH3W		
<div><p>1CT ♦</p><p>≤ 480 V L-L</p></div>	<div><p>2CT</p><p>≤ 480 V L-L</p></div>	<div><p>3CT</p><p>≤ 480 V L-L</p></div>
3PH4W		
<div><p>1CT ♦</p><p>≤ 277 V L-N ≤ 480 V L-L</p></div>	<div><p>2CT ♦</p><p>≤ 277 V L-N ≤ 480 V L-L</p></div>	<div><p>3CT</p><p>≤ 277 V L-N ≤ 480 V L-L</p></div>
3PH3W		



Input, output and communications wiring considerations

The pulse output is compatible with S0 format.

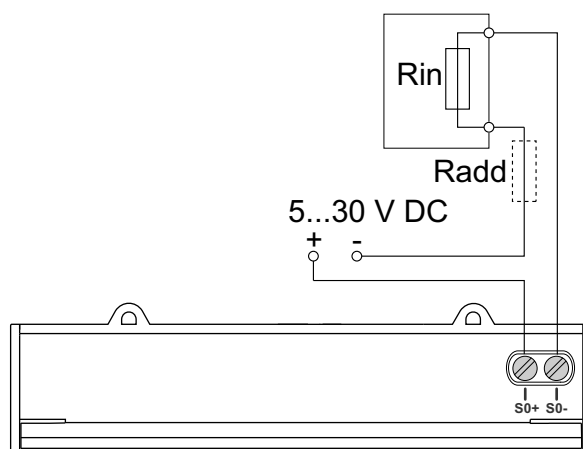
Pulse output

Pulse output: EM3212 / EM3412 / EM3712

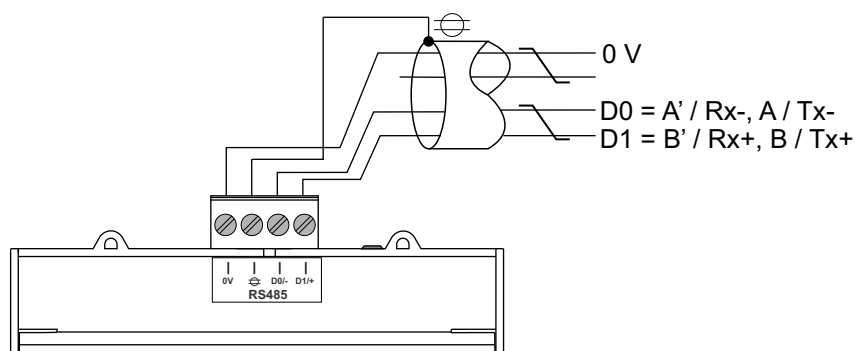
The pulse output indicates the primary consumption with consideration of transformer ratios.

It can be directly connected to a 24 V DC (< 30 V DC) input on a Zelio or Twido PLC.

For other concentrators, if $V_{DC} / R_{in} > 15 \text{ mA}$, add a resistor $R_{add} = (V_{DC} / 0.01) - R_{in} \Omega$



Modbus wiring: EM3122 / EM3224 / EM3322 / EM3424 / EM3724

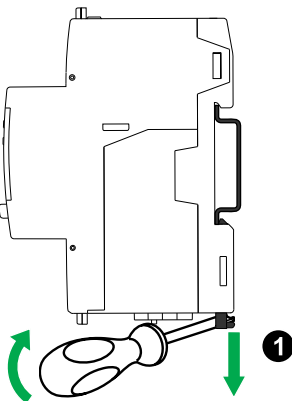


Meter sealing points

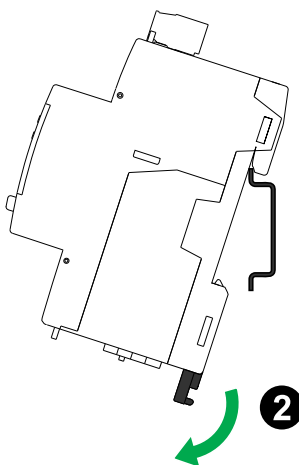
All meters have sealing covers and sealing points to help prevent access to inputs and outputs and current and voltage connections.

Dismounting

1. Use a flat-tip screwdriver (≤ 6.5 mm / 0.25 in) to lower the locking mechanism and release the meter.



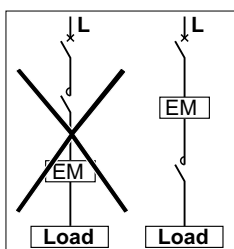
2. Lift the meter out and up to free it from the DIN rail.



Considerations for EM3100 / EM3200 / EM3300 and EM3400 series devices associated with a contactor

Connection requirements for EM3122 / EM3212 / EM3224 / EM3322 / EM3424 / EM3424

- When the meter is associated with a contactor, connect the meter upstream of the contactor.
- The meter must be protected by a circuit breaker.



Front panel display and meter setup

Overview

The meter features a front panel with signaling LEDs, a graphical display, and menu buttons that allow you to access the information required to operate the meter and modify parameter settings.

The front panel also allows you to display, configure and reset parameters.

Data display

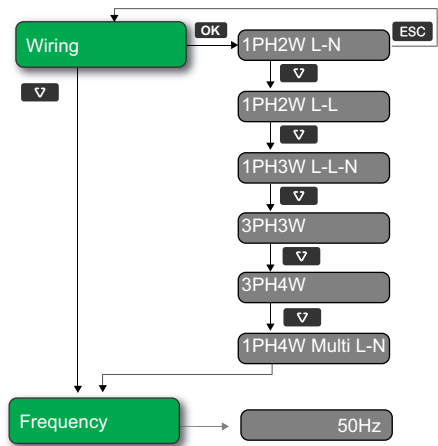
Data display screen overview

The diagram shows a digital display screen with the following elements labeled:

- A**: Measurement title (Total Ea Import)
- B**: Ea = active energy (if available)
- C**: Value (1234.5)
- D**: Scroll through the available screens (down arrow button)
- E**: View more screens related to the measurement category (if available) (OK button)
- F**: Go back to previous screen (ESC button)
- G**: Date and time (if applicable) (23 Apr 2014 12:00)
- H**: Unit (kWh)
- I**: Icon indicating date / time are not set (exclamation mark icon)

A	Measurement
B	Ea = active energy (if available)
C	Value
D	Scroll through the available screens
E	View more screens related to the measurement category (if available)
F	Go back to previous screen
G	Date and time (if applicable)
H	Unit
I	Icon indicating date / time are not set

Example: navigating the display screens

















1. Press **v** to scroll through the main display screens; then press **v** to move from **Wiring** to **Frequency**.
2. Press **OK** to access additional screens related to main screen (if available); then press **OK** to access screens for each of the available wiring.
3. Press **v** to scroll through these additional screens.

Meter status information

Two LEDs on the front panel indicate the current status of the device: the green status LED and the yellow energy pulsing LED.















The icons in the table below indicate the LED state:

-  = LED is off
-  = LED is on
-  = LED is flashing

Status LED	Energy pulsing LED	Description
		Off
	 1 s > 	On, no pulse counting
		On, with pulse counting
		Error, pulse counting stopped
		Abnormal, with pulse counting

Backlight and error / alert icon

The backlight (display screen) and error / alert icon on the top right corner of the display screen indicate the meter status.

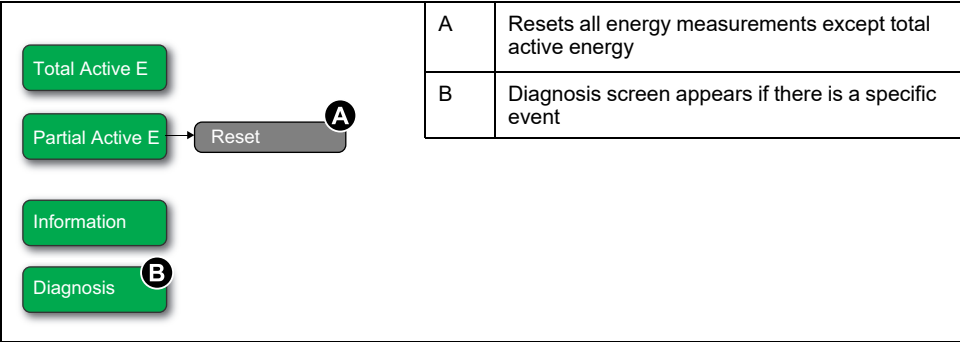
 Backlight	 Error / Alert icon	Description
 OFF	—	Device not powered ON or device is OFF
 ON / Dim	 OFF	LCD is in power saving mode.
 ON / Normal	 OFF	Normal working status.
 Flashing	 Flashing	Alarm / diagnosis is active.
 ON / Dim	 Flashing	Alarm / diagnosis is active for 3 hours and LCD is in power saving mode.
 ON / Normal  ON / Dim	 ON	Not active alarm. Logged alarms are not acknowledged by the user.

Data display screens

The following sections outline the data display screens available on the various meter models.

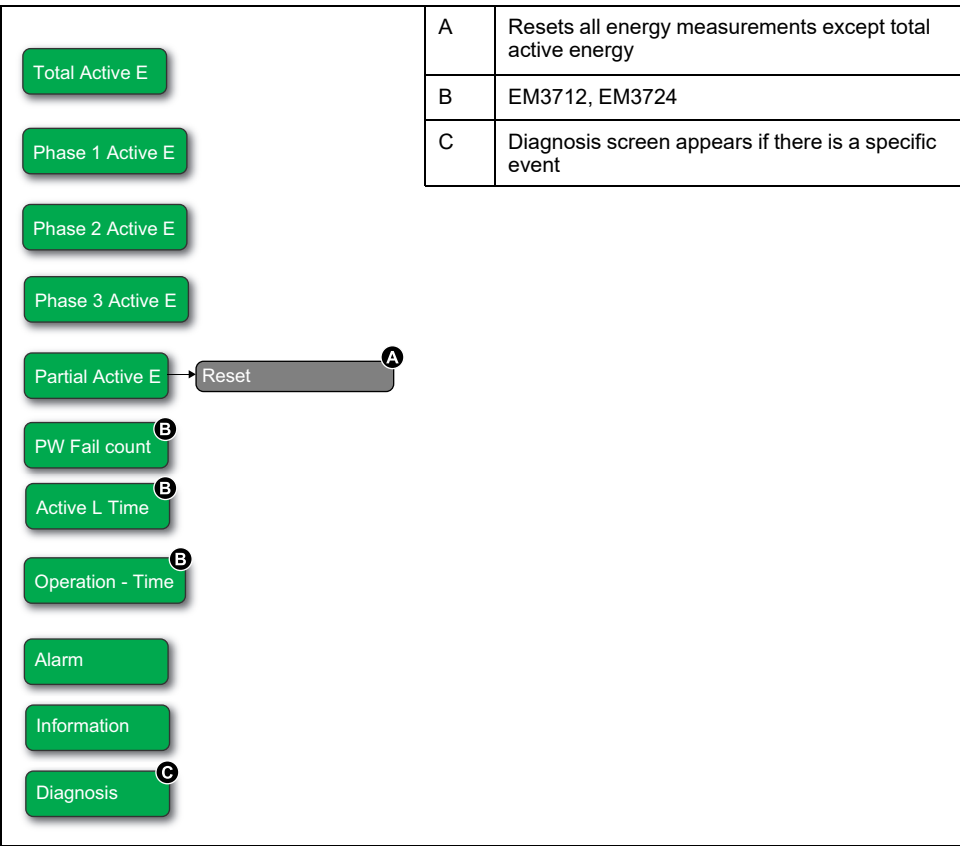
Data display screens: EM3122 / EM3212 / EM3224 / EM3322 / EM3412 / EM3424

Power system Wiring: 1PH2W L-N / 1PH2W L-L / 1PH3W L-L-N / 3PH3W / 1PH4W L-N



Data display screens: EM3122 / EM3212 / EM3224 / EM3322 / EM3412 / EM3424 / EM3712 / EM3724

Power system Wiring: 3PH4W



Resets

The following resets are available:

Reset	Description
Partial energy	Clears all active energy accumulated since the last reset. This does not reset the total active energy accumulation.

Resetting accumulated energy using the display

1. Navigate to the **Partial Active E** screen. The screen displays the date of the last reset. For example:

A		Date of last reset
A	Partial Active E	
	876.2	
	23-Apr-2012	kWh

2. Press and hold **ESC**. The **Reset** screen appears.
3. Press **OK** to confirm the reset and enter the meter password when prompted.

NOTE: Regardless of the screen you use to access this reset, accumulations of Partial Active Energy is cleared.

Meter information

Meter information (for example, model and firmware version) is available on the information screen. In display mode, press the down arrow until you reach the information screen:

Model: EM3224
Version: 2.0.000
(c) 2012 Shneider Electric
All Rights Reserved

The device clock

Only applicable for EM3224 / EM3424 / EM3724 meter models.

You must reset the time to account for any time change (for example, to switch the time from standard time to daylight savings time).

Clock behavior: EM3224 / EM3424 / EM3724

You are prompted to set the date and time when the meter is powered up. Press **ESC** to skip this step if you do not want to set the clock (you can enter configuration mode and set the date and time later, if required).

When the power is interrupted, the device retains its date and time information for 3 days. If power is interrupted for longer than 3 days, the device automatically displays the screen to set **Date & Time** when power is restored.

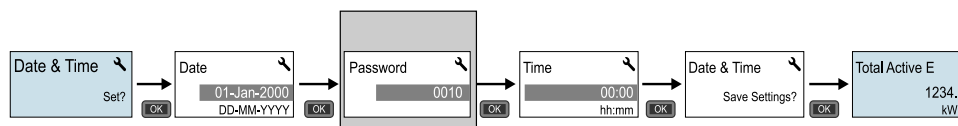
Date/time format

The date is displayed in the following format: DD-MMM-YYYY.

The time is displayed using the 24-hour clock in the following format: hh:mm:ss.

Setting the clock initially

The image below illustrates how to set the clock when you initially power up the device or after a power failure. To set the clock during normal operation, refer to .



NOTE: Password entry is only required for meters that support a password.

Device configuration

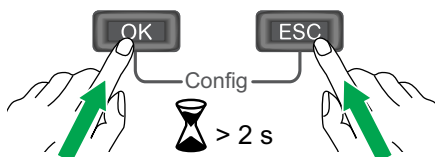
The default factory settings (as applicable based on your model) are listed in the table below:

Menu	Factory settings
Wiring	EM3100 series: 3PH4W EM3200 series: 3PH4W EM3300 series: 3PH4W EM3400 series: 3PH4W EM3700 series: 3PH4W; 3 CTs on I1, I2, and I3; Direct-No VT
CT Ratio	Varies depending on meter model
CT & VT Ratio	Varies depending on meter model
Frequency	50 Hz
Date	1-Jan-2000
Time	00:00:00
Overload Alarm	Disable

Menu	Factory settings
Pulse Output	100 imp/kWh
Communication	Varies depending on protocol
Com.Protection	Enable
Contrast	5
Password	0010

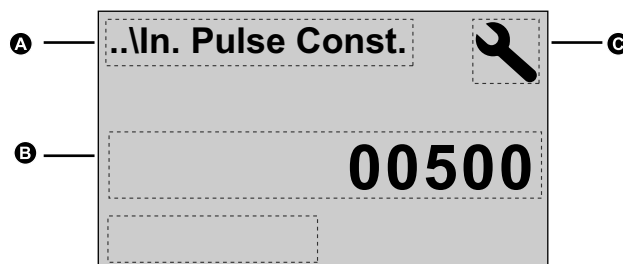
Entering configuration mode

1. Press and hold **OK** and **ESC** at the same time for about 2 seconds.
2. Enter the meter password, if prompted. The **Access Counter** screen displays, indicating the number of times the configuration mode has been accessed.



The front panel display in configuration mode

The image below illustrates the various elements of the display in configuration mode:



A	Parameter
B	Setting
C	Configuration mode icon

Com. Protection setting

For meters with communications capabilities, you can enable or disable the Com. Protection setting. If this setting is enabled, you must use the display to configure certain settings (for example, wiring or frequency, etc.) and perform resets; you cannot use communications.

The protected settings and resets are:

- Power system settings (for example, wiring, frequency, CT ratios)
- Date and time settings
- Communications settings
- Partial energy reset



Modifying parameters

There are two methods for modifying a parameter, depending on the type of parameter:

- Selecting a value in a list (for example, selecting 1PH2W L-N from a list of available power systems), or
- Modifying a numerical value, digit by digit (for example, entering a value for the date, time or VT primary).

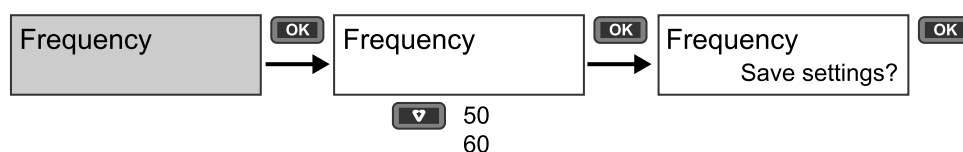
NOTE: Before you modify any parameters, ensure that you are familiar with the HMI functionality and navigation structure of your device in configuration mode.






Selecting a value from a list

1. Use the  button to scroll through the parameter values until you reach the desired value.
2. Press  to confirm the new parameter value.

Example: Configuring a list value

To set the nominal frequency of the meter:



1. Enter configuration mode and press the  button until you reach **Frequency** then press  to access the frequency configuration.
2. Press the  button to select the frequency you want then click . Press  again to save your changes.




Modifying a numerical value


When you modify a numerical value, the digit on the far right side is selected by default (except for Date/Time).

The parameters listed below are the only ones for which you set a numerical value (if the parameter is available on your device):

- Date
- Time
- Pick Up Value for an overload alarm
- Voltage Transformer (VT) Primary
- Current Transformer (CT) Primary
- Password
- Address of the meter

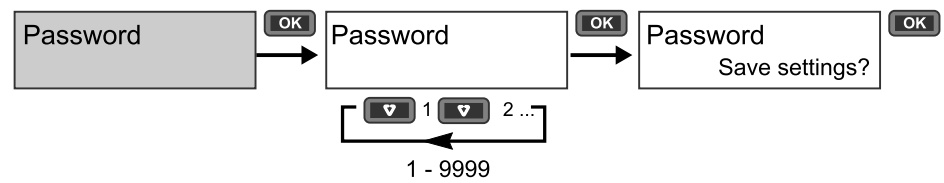
To modify a numerical value:

1. Use the  button to modify the selected digit.
2. Press  to shift to next digit. Modify the next digit, if needed, or press okay to move to the next digit. Continue to move through the digits until you reach the last digit then press  again to confirm the new parameter value.

If you enter an invalid setting for the parameter, when you press  after setting the left-most number, the cursor shifts back to the right-most number so you can enter a valid value.

Example: configuring a numeric value

To set the password:



1. Enter configuration mode and press the button until you reach **Password** then press to access the password configuration.
2. Press the button to increment the selected digit or press to move to the next digit to the left. When you reach the left-most digit, press to move to the next screen. Press again to save your changes.

Cancelling an entry

To cancel the current entry, press the button. The change is cancelled and the screen reverts to the previous display.

Configuration mode menus

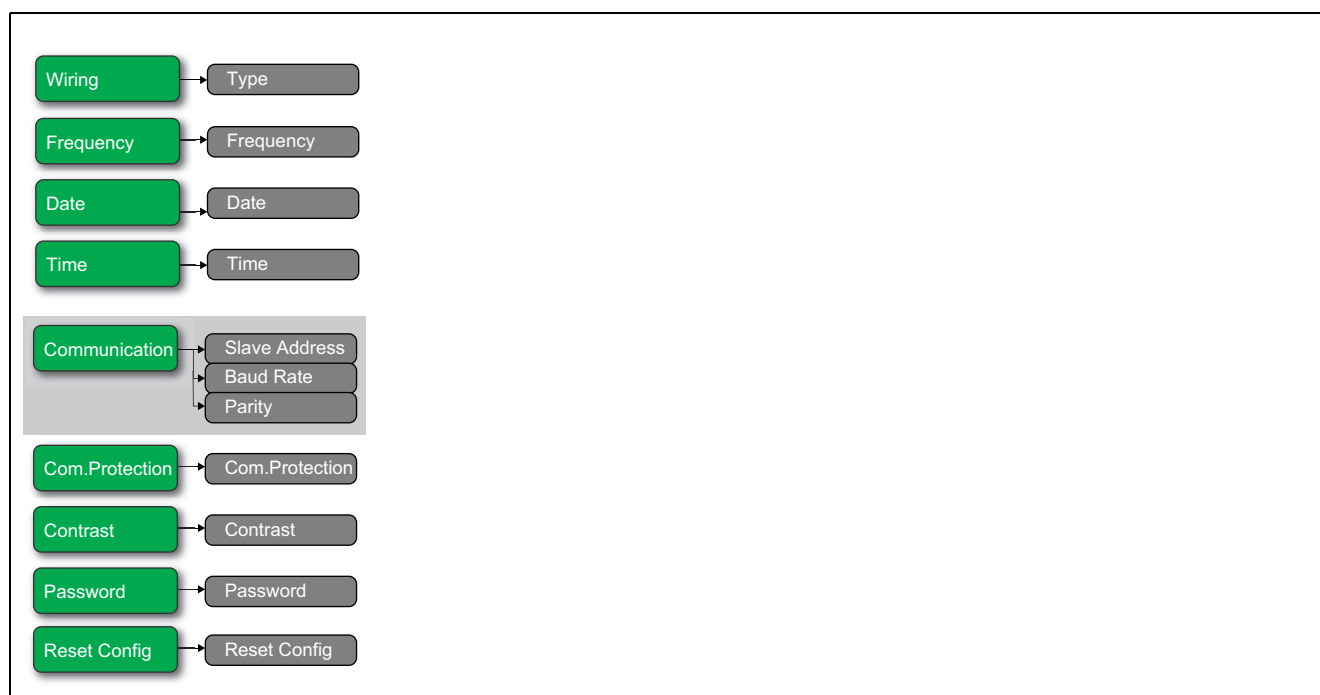
The following images show the configuration navigation for each device.

Configuration menu for EM3212 / EM3412



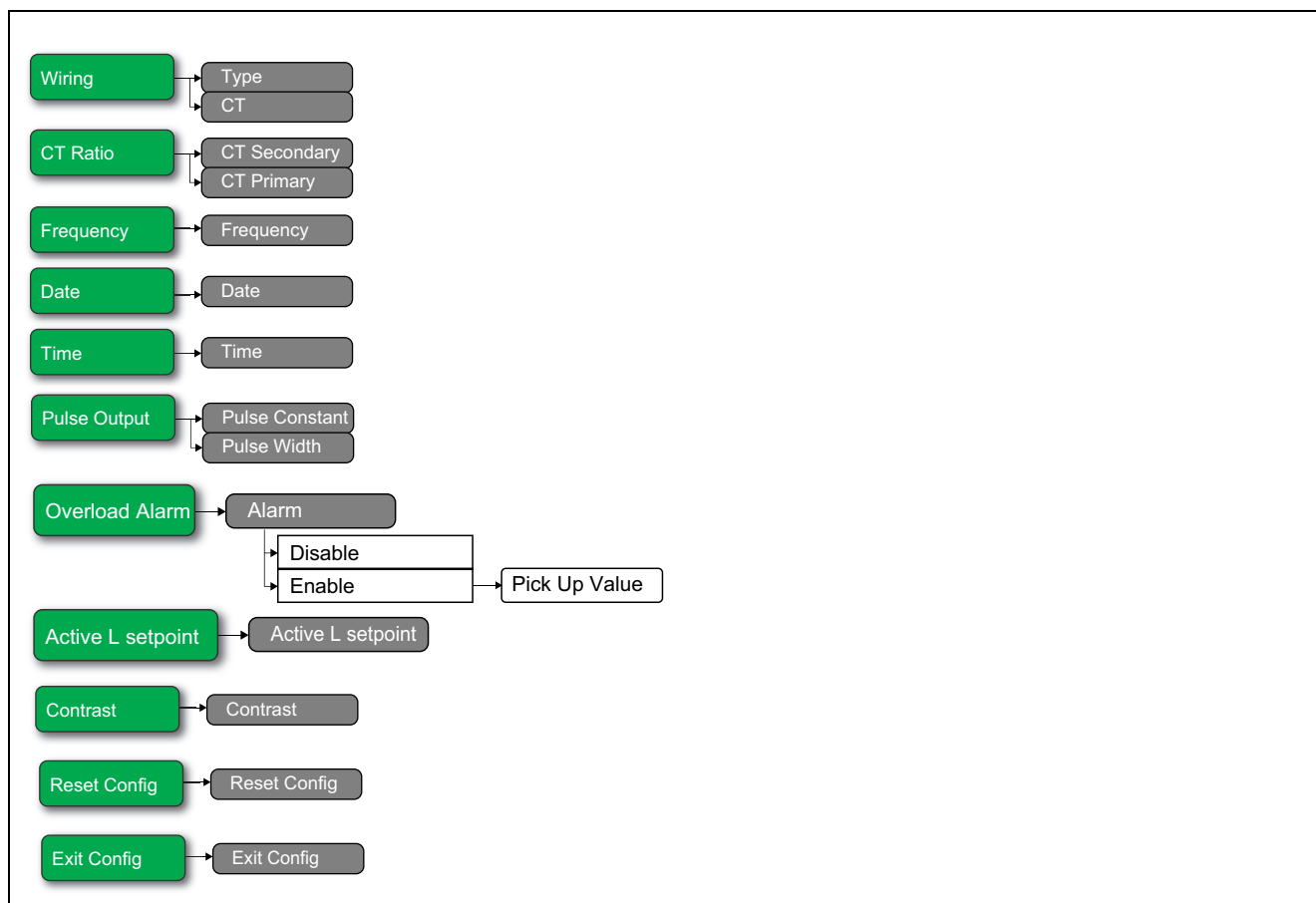
Section	Parameter	Options	Description
Wiring	Type	3PH3W 3PH4W 1PH2W L-N 1PH2W L-L 1PH3W L-L-N	Select the power system type the meter is wired to.
Frequency	Frequency	50 60	Select the frequency of the electrical power system, in Hz.
Date	Date	DD-MMM-YYYY	Set the current date using the specified format.
Time	Time	hh:mm	Use the 24-hour format to set the time.
Pulse Output	Pulse Constant (imp/kWh)	100 200 1000 1 10 20	Set the pulses per kWh for the pulse output.
	Pulse Width (ms)	50 100 200 300	Set the pulse width (ON time).
Contrast	Contrast	1 – 9	Increase or decrease the value to increase or decrease the display contrast.
Password	Password	0 – 9999	Sets the password for accessing the meter configuration screens and resets.
Reset Config	Reset Config	—	Settings are reset to their defaults, except for Password. Meter restarts.

Configuration menu for EM3122 / EM3224 / EM3322 / EM3424



Section	Parameter	Options	Description
Wiring	Type	3PH4W 1PH2W L-N 1PH2W L-L 1PH3W L-L-N 3PH3W 1PH4W Multi L-N	Select the power system type the meter is wired to.
Frequency	Frequency	50 60	Select the frequency of the electrical power system, in Hz.
Date	Date	DD-MMM-YYYY	Set the current date using the specified format.
Time	Time	hh:mm	Set the time using the 24-hour format.
Communication	Slave Address	1 – 247	Set the address for this device. The address must be unique for each device in a communications loop.
	Baud Rate	19200 38400 9600	Select the speed for data transmission. The baud rate must be the same for all devices in a communications loop.
	Parity	Even Odd None	Select None if the parity bit is not used. The parity setting must be the same for all devices in a communications loop. NOTE: Number of stop bits = 1 and 2.
Com.Protection	Com.Protection	Enable Disable	Protects selected settings and resets from configuration using communications.
Contrast	Contrast	1 – 9	Increase or decrease the value to increase or decrease the display contrast.
Password	Password	0 – 9999	Sets the password for accessing the meter configuration screens and resets.
Reset Config	Reset Config	—	Settings are reset to their defaults, except for Password. Meter restarts.

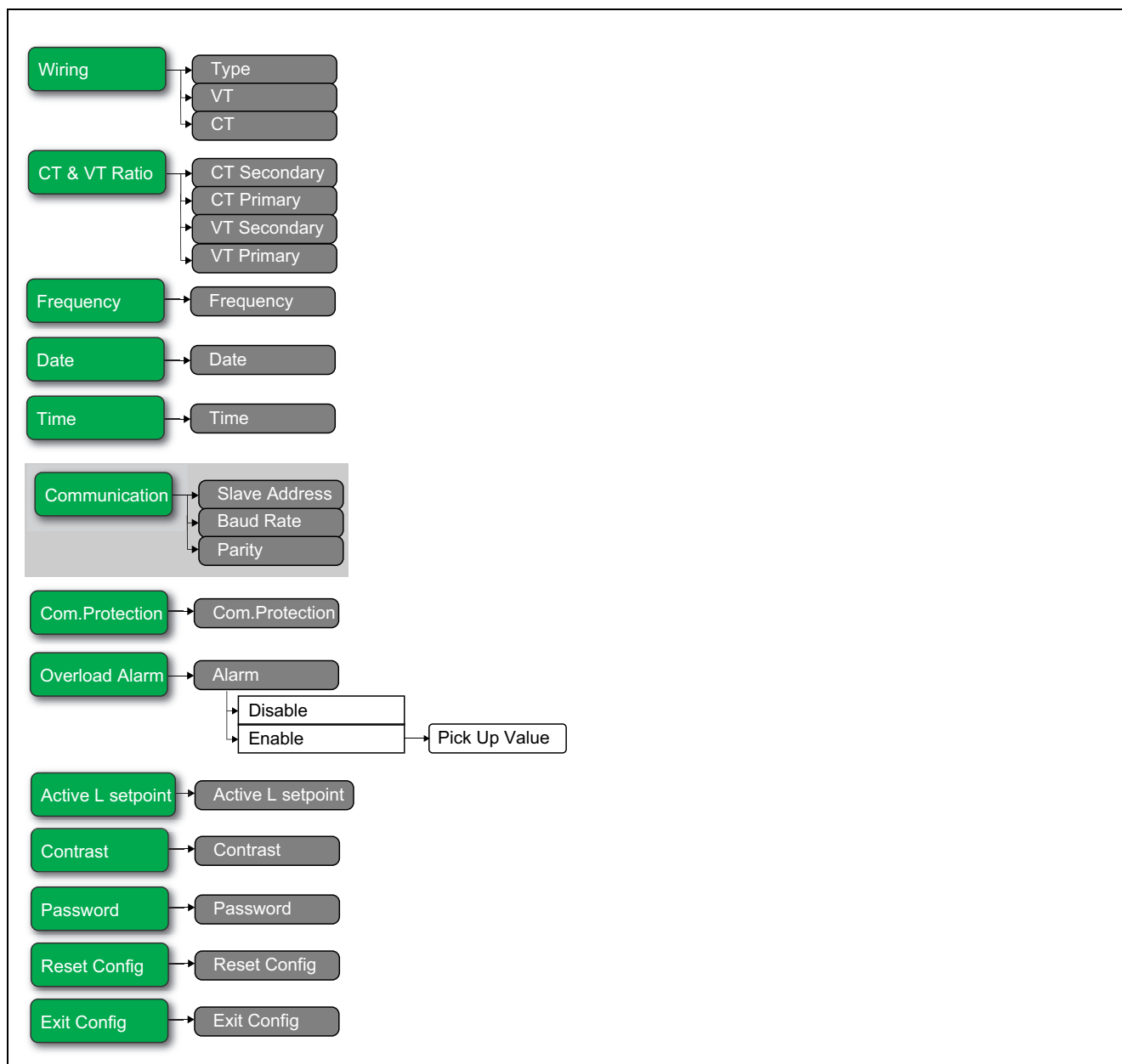
Configuration menu for EM3712



Section	Parameter	Options	Description
Wiring	Type	3PH3W 3PH4W 1PH2W L-N 1PH2W L-L 1PH3W L-L-N	Select the power system type the meter is wired to.
	CT	3CTs on I1, I2, I3 1 CT on I1 2 CTs on I1, I3	Define how many current transformers (CT) are connected to the meter and which terminals they are connected to.
CT Ratio	CT Secondary	1 5	Select the size of the CT secondary, in Amps.
	CT Primary	1 to 32767	Enter the size of the CT primary, in Amps.
Frequency	Frequency	50 60	Select the frequency of the electrical power system, in Hz.
Date	Date	DD-MMM-YYYY	Set the current date using the specified format.
Time	Time	hh:mm	Set the time using the 24-hour format.

Section	Parameter	Options	Description
Pulse Output	Pulse Constant (imp/kWh)	0.01 0.1 1 10 100 500	Set the pulses per kWh for the pulse output.
	Pulse Width (ms)	50 100 200 300	Set the pulse width (ON time).
Overload Alarm	Alarm	Disable Enable	Select whether or not the Overload Alarm is enabled: <ul style="list-style-type: none"> • Disable: the alarm is disabled. • Enable: the alarm is enable. If you enabled the Overload Alarm, you must also configure the Pick Up Value in kW from 1 - 9999999.
Active L setpoint	Active L setpoint	1 – 9999	Specifies the minimum average current at the load before the timer starts. The meter begins counting the number of seconds the load timer is on (i.e., whenever the readings are equal to or above this average current threshold).
Contrast	Contrast	1 – 9	Increase or decrease the value to increase or decrease the display contrast.
Reset Config	Reset Config	—	Settings are reset to their defaults.
Exit Config	Exit Config	—	Return to the meter's main page.

Configuration menu for EM3724



Section	Parameter	Options	Description
Wiring	Type	3PH3W 3PH4W 1PH2W L-N 1PH2W L-L 1PH3W L-L-N 1PH4W Multi L-N	Select the power system type the meter is wired to.
	VT	Direct-NoVT Wye (3VTs) Delta (2VTs)	Select how many voltage transformers (VT) are connected to the electrical power system.
	CT	3CTs on I1, I2, I3 1 CT on I1 2 CTs on I1, I3	Define how many current transformers (CT) are connected to the meter and which terminals they are connected to.
CT & VT Ratio	CT Secondary	1 5	Select the size of the CT secondary, in Amps.
	CT Primary	1 to 32767	Enter the size of the CT primary, in Amps.
	VT Secondary	100 110 115 120	Select the size of the VT secondary, in Volts.
	VT Primary	1 to 1000000	Enter the size of the VT primary, in Volts.
Frequency	Frequency	50 60	Select the frequency of the electrical power system, in Hz.
Date	Date	DD-MMM-YYYY	Set the current date using the specified format.
Time	Time	hh:mm	Set the time using the 24-hour format.
Communication	Slave Address	1 – 247	Set the address for this device. The address must be unique for each device in a communications loop.
	Baud Rate	38400 19200 9600	Select the speed for data transmission. The baud rate must be the same for all devices in a communications loop.
	Parity	Even Odd None	Select None if the parity bit is not used. The parity setting must be the same for all devices in a communications loop. NOTE: Number of stop bits = 1 and 2
Com.Protection	Com.Protection	Enable Disable	Protects selected settings and resets from configuration using communications.
Overload Alarm	Alarm	Disable Enable	Select whether or not the Overload Alarm is enabled: <ul style="list-style-type: none"> Disable: the alarm is disabled. Enable: the alarm is enabled. If you enable the Overload Alarm, you must also configure the Pick Up Value in kW from 1 - 9999999.
Active L setpoint	Active L setpoint	—	Specifies the minimum average current at the load before the timer starts. The meter begins counting the number of seconds the load timer is on (i.e., whenever the readings are equal to or above this average current threshold).
Contrast	Contrast	1 – 9	Increase or decrease the value to increase or decrease the display contrast.
Password	Password	0 – 9999	Sets the password for accessing the meter configuration screens and resets.
Reset Config	Reset Config	—	Settings are reset to their defaults.
Exit Config	Exit Config	—	Return to the meter's main page.

Communications using Modbus

Modbus communication overview

Modbus RTU protocol is available on EM3122 / EM3224 / EM3322 / EM3424 / EM3724

The information in this section assumes that you have an advanced understanding of Modbus communications, your communications network and the power system that your meter is connected to.

There are three different ways of using Modbus communication:

- By sending commands using the command interface
- By reading the Modbus registers
- By reading Device Identification

Modbus communications settings

Before communicating with the device using Modbus protocol, use the display to configure the following settings:

Settings	Possible values
Baud rate	9600 Baud 19200 Baud 38400 Baud
Parity	Odd Even None NOTE: Number of stop bits = 1 and 2
Address	1 – 247

Communications LED indicator for Modbus devices

The yellow communications LED indicates the status of communication between the meter and the master as follows:

If...	Then...
The LED is flashing	Communication with the device has been established. NOTE: If there is an error online, the LED also flashes.
The LED is off	There is no active communication between the master and the slave

Modbus functions

Function list

The table below lists the supported Modbus functions:

Function code		Function name
Decimal	Hexadecimal	
3	0x03	Read Holding Registers
16	0x10	Write Multiple Registers
43/14	0x2B/0x0E	Read Device Identification

For example:

- To read different parameters from the meter, use function 3 (Read).

Table format

Register tables have the following columns:

Address	Register	Action (R/W/WC)	Size	Type	Units	Range	Description
---------	----------	--------------------	------	------	-------	-------	-------------

- **Address:** A 16-bit register address in hexadecimal. The address is the data used in the Modbus frame.
- **Register:** A 16-bit register number in decimal (register = address + 1).
- **Action:** The read/write/write by command property of the register.
- **Size:** The data size in Int16.
- **Type:** The encoding data type.
- **Units:** The unit of the register value.
- **Range:** The permitted values for this variable, usually a subset of what the format allows.
- **Description:** Provides information about the register and the values that apply.

Unit table

The following data types appear in the Modbus register list:

Type	Description	Range
UInt16	16 bit unsigned integer	0 to 65535
Int16	16 bit signed integer	-32768 to +32767
UInt32	32 bit unsigned integer	0 to 4 294 967 295
Int64	64 bit unsigned integer	0 to 18 446 744 073 709 551 615
UTF8	8 bit field	Multi byte character encoding for Unicode
Float32	32 bit value	Standard representation IEEE for floating number (with single precision))
Bitmap	—	—
DATETIME	See below table	—

DATETIME format:

Word	Bits																
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
1	Reserved								R4 (0)	Year (0 – 127)							
2	0				Month (1 – 12)				WD (0)			Day (1 – 31)					
3	SU (0)	0		Hour (0 – 23)					iV	0	Minute (0 – 59)						
4	Millisecond (0 – 59999)																
R4 :						Reserved Bit											
Year :						7 bits (year from 2000)											
Month :						4 bits											
Day :						5 bits											
Hour :						5 bits											
Minute :						6 bits											
Millisecond :						2 octets											
WD (day of the week) :						1 – 7: Sunday – Saturday											
SU (summer time) :						Bit to 0 if this parameter is not used											
iV (validity of received data) :						Bit to 0 if this parameter is not valid or not used											

Command interface

Command interface overview

The command interface allows you to configure the meter by sending specific command requests using Modbus function 16.

Command request

The following function table describes a Modbus command request:

Slave Number	Function Code	Command block		CRC
		Register Address	Command Description	
1 – 247	16	5250 (up to 5374)	<p>The command is made of a command number and a set of parameters. See the detailed description of each command in the command list.</p> <p>NOTE: All the reserved parameters can be considered as any value, e.g. 0.</p>	Checking

The command result can be obtained by reading registers 5376.

The following function table describes the Command result:

Register Address	Content	Size (Int16)	Data (example)
5376	<p>Result</p> <p>Command result codes:</p> <ul style="list-style-type: none"> 0 = Valid Operation 3000 = Invalid Command 3001 = Invalid Parameter 3002 = Invalid Number of Parameters 3007 = Operation Not Performed 	1	0 (Valid Operation)

Command list

Set Date/Time

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
1003	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	2000 – 2099	Year
	W	1	UInt16	—	1 – 12	Month
	W	1	UInt16	—	1 – 31	Day
	W	1	UInt16	—	0 – 23	Hour
	W	1	UInt16	—	0 – 59	Minute
	W	1	UInt16	—	0 – 59	Second
	W	1	UInt16	—	—	(Reserved)

Set Wiring

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2000	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	1, 3	Number of phases
	W	1	UInt16	—	2, 3, 4	Number of wires
	W	1	UInt16	—	0, 1, 2, 3, 11, 13	Power System Configuration: 0 = 1PH2W L-N 1 = 1PH2W L-L 2 = 1PH3W L-L-N 3 = 3PH3W 11 = 3PH4W 13 = 1PH4W L-N
	W	1	UInt16	Hz	50, 60	Nominal Frequency
	W	2	Float32	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	2	Float32	V	1000000.0	VT Primary NOTE: For EM3712 / EM3724
	W	1	UInt16	V	100, 110, 115, 120	VT Secondary NOTE: For EM3712 / EM3724
	W	1	UInt16	—	1, 2, 3	Number of CTs NOTE: For EM3712 / EM3724
	W	1	UInt16	A	1 to 32767	CT Primary NOTE: For EM3712 / EM3724
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1, 2	VT Connection type: 0 = Direct Connect 1 = 3PH3W (2 VTs) 2 = 3PH4W (3 VTs) NOTE: For EM3712 / EM3724

Set Pulse Output (EM3212 / EM3412 / EM3712)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2003	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1	Pulse Output enable / disable: 0 = Disable 1 = Enable
	W	2	Float32	pulse/kWh	EM3212 / EM3412: 1, 10, 20, 100, 200, 1000	Pulse constant

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
					EM3712: 0.01, 0.1, 1, 10, 100, 500	
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
2038	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	ms	50, 100, 200, 300	Pulse width
2039	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	imp/kWh imp/KVARh	0, 1	LED energy pulse: 0 = kWh 1 = kVARh

Overload Alarm Setup EM3712 / EM3724

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
7000	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	9	Alarm ID
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1	0 = Disable 1 = Enable
	W	2	Float32	—	0.0 – 1e10	Pickup value
	W	2	UInt32	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	2	UInt32	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	4	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
20000	W	1	UInt16	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	2	UInt32	—	—	(Reserved)
20001	W	1	UInt16	—	—	Acknowledge the Overload Alarm

Active load setpoint (EM3724)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2044	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	1 – 9999	Average current Amps

Communications Setup

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
5000	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	1 – 247	Address
	W	1	UInt16	—	0, 1, 2	Baud Rate: 0 = 9600 1 = 19200 2 = 38400
	W	1	UInt16	—	0, 1, 2	Parity: 0 = Even 1 = Odd 2 = None
	W	1	UInt16	—	—	(Reserved)

Reset Partial Energy Counters

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2020	W	1	UInt16	—	—	(Reserved) EM3100 / EM3200 / EM3300 / EM3400 / EM3700: Partial Active Energy and Phase Energy registers will be reset

Active Load Timer Reset

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2010	W	1	UInt16	—	—	(Reserved) EM3700: Active Load time registers will be reset

Reset Input Metering Counter (EM3100 / EM3200 / EM3300 / EM3400 / EM3700)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2023	W	1	UInt16	—	—	(Reserved)

Modbus register list

System

Address	Register	Action (R/W/WC)	Size	Type	Units	Description
0x001D	30	R	20	UTF8	—	Meter Name
0x0031	50	R	20	UTF8	—	Meter Model
0x0045	70	R	20	UTF8	—	Manufacturer
0X0059	90	R	1	UInt16	—	Product ID Number
0x0081	130	R	2	UInt32	—	Serial Number
0x0083	132	R	4	DATEIME	—	Date of Manufacture
0x0087	136	R	5	UTF8	—	Hardware Revision
0x0664	1637	R	1	UInt16	—	Present Firmware Version (DLF format): X.Y.ZTT
0x0723	1829	R/WC	1 X 4	UInt16	—	Power failure Count
0x0724 - 0x727	1830 - 1832	R/WC	1 X 4	UInt16	—	Power failure Date/Time: Reg. 1829: Year (b6:b0) 0 – 99 (year from 2000 to 2099) Reg. 1830: Month (b11:b8), Weekday (b7:b5), Day (b4:b0) Reg. 1831: Hour (b12:b8), Minute (b5:b0) Reg. 1832: Millisecond
0x0734 - 0x0737	1845 - 1848	R/WC	1 X 4	UInt16	—	Date/Time: Reg. 1845: Year (b6:b0) 0 – 99 (year from 2000 to 2099) Reg. 1846: Month (b11:b8), Weekday (b7:b5), Day (b4:b0) Reg. 1847: Hour (b12:b8), Minute (b5:b0) Reg. 1848: Millisecond
0xAFC7	45000	R	1	Bitmap	—	Diagnostics error status 0 = Inactive 1 = Active Bit0 = Code 101 Bit1 = Code 102 Bit2 = Code 201 Bit3 = Code 202 Bit4 = Code 203 Bit5 = Code 204 Bit6 = Code 205 Bit7 = Code 206 Bit8 = Code 207

Meter Setup and Status

Address	Register	Action (R/W/WC)	Size	Type	Units	Description
0x07D0	2001	R	2	UInt32	Second	Meter Operation Timer NOTE: Not applicable for EM3122 / EM3224 / EM3322 / EM3424
0x07D3	2004	R	2	UInt32	Second	Meter Operation Timer NOTE: Not applicable for EM3122 / EM3224 / EM3322 / EM3424

Address	Register	Action (R/W/WC)	Size	Type	Units	Description
0x07DD	2014	R	1	UInt16	—	Number of Phases
0x07DE	2015	R	1	UInt16	—	Number of Wires
0x07DF	2016	R/WC	1	UInt16	—	Power System: 0 = 1PH2W L-N 1 = 1PH2W L-L 2 = 1PH3W L-L with N 3 = 3PH3W 11 = 3PH4W 13 = 1PH4W multi L with N
0x07E0	2017	R/WC	1	UInt16	Hz	Nominal Frequency
0x07E8	2025	R	1	UInt16	—	Number VTs NOTE: Not applicable for EM3122 / EM3224 / EM3322 / EM3424
0x07E9	2026	R/WC	2	Float32	V	VT Primary
0x07EB	2028	R/WC	1	UInt16	V	VT Secondary
0x07EC	2029	R/WC	1	UInt16	—	Number CTs
0x07ED	2030	R/WC	1	UInt16	A	CT Primary
0x07EE	2031	R/WC	1	UInt16	A	CT Secondary
0x07F3	2036	R/WC	1	UInt16	—	VT Connection Type: 0 = Direct Connect 1 = 3PH3W (2 VTs) 2 = 3PH4W (3 VTs)
0x0801	2051	R	1	Float32	A	Active load Setpoint 1 – 9999 (Reserved)

Command Interface

Address	Register	Action (R/W/WC)	Size	Type	Units	Description
0x1481	5250	R/W	1	UInt16	—	Requested Command
0x1483	5252	R/W	1	UInt16	—	Command Parameter 001
0x14FD	5374	R/W	1	UInt16	—	Command Parameter 123
0x14FE	5375	R	1	UInt16	—	Command Status
0x14FF	5376	R	1	UInt16	—	Command Result codes: 0 = Valid Operation 3000 = Invalid Command 3001 = Invalid Parameter 3002 = Invalid Number of Parameters 3007 = Operation Not Performed
0x1500	5377	R/W	1	UInt16	—	Command Data 001
0x157A	5499	R	1	UInt16	—	Command Data 123

Communication

Address	Register	Action (R/W/WC)	Size	Type	Units	Description
0x1963	6500	R	1	UInt16	—	Protocol 0 = Modbus
0x1964	6501	R/WC	1	UInt16	—	Address
0x1965	6502	R/WC	1	UInt16	—	Baud Rate: 0 = 9600 1 = 19200 2 = 38400
0x1966	6503	R/WC	1	UInt16	—	Parity: 0 = Even 1 = Odd 2 = None NOTE: Number of stop bits = 1 and 2

Meter Data

Power and frequency

Address	Register	Action (R/W/WC)	Size	Type	Units	Description
Power						
0x0BED	3054	R	2	Float32	kW	Active Power Phase 1
0x0BEF	3056	R	2	Float32	kW	Active Power Phase 2
0x0BF1	3058	R	2	Float32	kW	Active Power Phase 3
0x0BF3	3060	R	2	Float32	kW	Total Active Power
Frequency						
0x0C25	3110	R	2	Float32	Hz	Frequency

Energy

Most energy values are available in both signed 64-bit integer and 32-bit floating point format.

Energy values – 64-bit integer						
Address	Register	Action (R/W/WC)	Size	Type	Units	Description
Total Energy (cannot be reset)						
0x0C83	3204	R	4	Int64	Wh	Total Active Energy Import
Partial Energy						
0x0CB7	3256	R	4	Int64	Wh	Partial Active Energy Import
Phase Energy						
0x0DBD	3518	R	4	Int64	Wh	Active Energy Import Phase 1

Energy values – 64-bit integer						
Address	Register	Action (R/W/WC)	Size	Type	Units	Description
0x0DC1	3522	R	4	Int64	Wh	Active Energy Import Phase 2
0x0DC5	3526	R	4	Int64	Wh	Active Energy Import Phase 3

Energy values – 32-bit floating point						
Address	Register	Action (R/W/WC)	Size	Type	Units	Description
Total Energy (cannot be reset)						
0xB02B	45100	R	2	Float32	kWh	Total Active Energy Import
Partial Energy						
0xB033	45108	R	2	Float32	kWh	Partial Active Energy Import
Phase Energy						
0xB037	45112	R	2	Float32	kWh	Active Energy Import Phase 1
0xB039	45114	R	2	Float32	kWh	Active Energy Import Phase 2
0xB03B	45116	R	2	Float32	kWh	Active Energy Import Phase 3

Overload Alarm (EM3712 / EM3724)

Address	Register	Action (R/W/WC)	Size	Type	Units	Description
0xAFC8	45001	R/WC	1	Bitmap	—	Overload Alarm Setup: 0x0000 = Disabled 0x0100 = Enabled
0xAFC9	45002	R/WC	2	Float32	kW	Pickup Setpoint
0xAFCC	45005	R	1	Bitmap	—	Activated Status: 0x0000 = Alarm is inactive 0x0100 = Alarm is active
0xAFCD	45006	R	1	Bitmap	—	Unacknowledged Status: 0x0000 = Historic alarm is acknowledged by the user 0x0100 = Historic alarm is unacknowledged by the user
0xAFCE	45007	R	4	DATETIME	—	Last Alarm - Time Stamp
0xAxFD2	45011	R	2	Float32	kW	Last Alarm - Value

Read Device Identification

The meters support the Read Device Identification function with the mandatory objects Vendor Name, Product Code, Firmware Revision, Vendor URL, Product Range, Product Model and User Application Name.

Object ID	Name / Description	Length	Value	Note
0x00	Vendor Name	20	Schneider Electric	—
0x01	Product Code	20	Commercial reference	The ProductCode value is identical to the catalog number of each device Ex: METSEEM3122

Object ID	Name / Description	Length	Value	Note
0x02	Firmware Revision	06	XXX.YYY.ZZZ	—
0x03	Vendor URL	20	www.se.com	—
0x04	Product Range	20	EM3000	—
0x05	Product Model	20	Product Model	Ex: METSEEM3122
0x06	User Application Name	20	User configurable	Default = Product model

The Read Device ID codes 01, 02 and 04 are supported:

- 01 = request to get basic device identification (stream access)
- 02 = request to get regular device identification (stream access)
- 04 = request to get one specific identification object (individual access)

The Modbus request and response are compliant with the Modbus Application Protocol Specification.

Configuring using PowerLogic™ ION Setup

Overview

Configure the meters using the PowerLogic™ ION Setup.

⚠ WARNING

UNINTENDED OPERATION

- Do not use the ION Setup software and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Do not rely solely on the ION Setup data to determine if your power system is functioning correctly or meeting all applicable standards and compliances.
- Do not use the ION Setup control for time-critical functions because delays can occur between the time a control action is initiated and when that action is applied.
- Do not incorrectly configure the ION Setup and its associated devices.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

LOSS OF DATA

Before changing device configuration values, ensure that all recorded data has been saved in a secure location.

Failure to follow these instructions can result in equipment damage.

NOTICE

LOSS OF CONTROL

Before changing scale factors, disable all affected alarms and ensure that any recorded data has been saved. Changing scale factors may affect alarm status and any recorded data.

Failure to follow these instructions can result in equipment damage.

Setting up a network site

You can communicate with the EM3122 / EM3224 / EM3322 / EM3424 / EM3724 series meters using the RS-485 gateway. A gateway device, such as an EGX or ION7650, must be configured first to provide communications access. The gateway uses the RS-485 protocol to communicate on its serial port.

Before using the ION Setup, it is important to ensure that all devices in the system are wired correctly and that communications for the devices have been properly configured.

1. Start the ION Setup in Network mode.
2. Right-click the **System** icon and select **Insert Item**.
3. Select **Site** and then click **OK**.
The **New Site** dialog appears.
4. Enter a descriptive name for the site in the **Name** dialog. Then, choose **Serial**.

5. Enter the **comm port** from the drop down list
6. Enter the **Port Settings** from the drop down list.
7. Enter the **Baud** value from the drop down list and then click **OK**

Adding an EM3122 / EM3224 / EM3322 / EM3424 / EM3724 series meter to a site

1. Start The ION Setup in Network mode.
2. Right-click the site icon and select **Insert Item**.
3. Select **Device** and then click **OK**.
The **New Device** dialog appears.
4. Enter a descriptive name for your device in the dialog box **Name** (for example, EM3224).
5. Select **PowerLogic EM3000 Series Energy Meter** from the drop down list for the **Type**.
6. Select **Unit ID** give the value between **1** to **247**.
7. Select the **Group** you want to assign the device from the drop down list, and then click **OK** to go back to the Network Viewer.

NOTE:

- You may need to change the template option if the meter setup screens do not correctly reflect your meter **Type**.
- The **Display** tab dialog box will highlight the current **Template Options** when it has established communication with the meter. Select the appropriate **Template Options** (**Default** / **METSEEM3122** / **METSEEM3224** / **METSEEM3322** / **METSEEM3424** / **METSEEM3724**) for the device and then click **OK** to go back to the Network Viewer.

EM3000 series configuration screens

Configuring the alarm parameters for EM3724 series meter

Configure the alarm parameters using the **Alarming** screen.

NOTE: By default, the alarm is disabled.

1. Double-click **Alarming** to open the dialog setup.
2. Select **Standard** alarm and click **Edit** to open **Standard Alarm Setup** dialog.
3. Select **Over Active Power** in the left column to **Edit** its values.

Parameters	Options		Description
Over Active Power	Enable	–	Enable or disable the over active power alarm.
	Setpoint Pickup (kW)	1 to 9999999	

4. Click **OK**, and then click **Send** to save your changes to the meter.

NOTE: When changes are not saved to the meter, the status bar on the bottom left screen shows **Download Incomplete**.

Configuring basic setup parameters

This setup screen allows you to set the values for each of the Basic Setup parameters. For details about all available setup parameters for EM3122 / EM3224 / EM3322 / EM3424 / EM3724 series devices.

NOTE: EM3122 / EM3224 / EM3322 / EM3424 are direct connect models and therefore no CT/VT information is available for configuration.

1. Double-click on **Basic Setup** to open the dialog showing the list of parameters.
2. Select a parameter and click **Edit** to open its specific setup dialog.

Parameter	Options	Description
System Type	1Ph 2Wire L-N <ul style="list-style-type: none"> • Number of CTs <ul style="list-style-type: none"> ◦ (1) One CT on I1 • Number of VTs <ul style="list-style-type: none"> ◦ (0) Direct Connect 	<p>Step 1: Select this when the meter is wired to measure a single-phase 2 wire line-to-neutral power system, and then click Next.</p> <p>Step 2: Choose the Number of CTs and Number of VTs from the Set System Options, and then click Finish.</p>
	1Ph 2Wire L-L <ul style="list-style-type: none"> • Number of CTs <ul style="list-style-type: none"> ◦ (1) One CT on I1 • Number of VTs <ul style="list-style-type: none"> ◦ (0) Direct Connect 	<p>Step 1: Select this when the meter is wired to measure a single-phase 2 wire line-to-line power system, and then click Next.</p> <p>Step 2: Choose the Number of CTs and Number of VTs from the Set System Options, and then click Finish.</p>
	1Ph 3Wire L-L with N <ul style="list-style-type: none"> • Number of CTs <ul style="list-style-type: none"> ◦ (2) Two CTs on I1 I2 • Number of VTs <ul style="list-style-type: none"> ◦ (0) Direct Connect 	<p>Step 1: Select this when the meter is wired to measure a single-phase 3 wire line-to-line with grounded neutral power system, and then click Next.</p> <p>Step 2: Choose the Number of CTs and Number of VTs from the Set System Options, and then click Finish.</p>
	3Ph 3Wire Ungrounded Delta <ul style="list-style-type: none"> • Number of CTs <ul style="list-style-type: none"> ◦ (1) One CT on I1 ◦ (2) Two CTs on I1 I3 ◦ (3) Three CTs • Number of VTs <ul style="list-style-type: none"> ◦ (2) Two VTs on V1 V3 ◦ (0) Direct Connect 	<p>Step 1: Select this when the meter is wired to measure a 3 phase 3 wire ungrounded delta power system, and then click Next.</p> <p>Step 2: Choose the Number of CTs and Number of VTs from the Set System Options, and then click Finish.</p>
	3Ph 4Wire Grounded Wye (Default) <ul style="list-style-type: none"> • Number of CTs <ul style="list-style-type: none"> ◦ (1) One CT on I1 ◦ (2) Two CTs on I1 I3 ◦ (3) Three CTs • Number of VTs <ul style="list-style-type: none"> ◦ (3) Three VTs ◦ (0) Direct Connect 	<p>Step 1: Select this when the meter is wired to measure a 3 phase 4 wire grounded Wye power system, and then click Next.</p> <p>Step 2: Choose the Number of CTs and Number of VTs from the Set System Options, and then click Finish.</p>
	1PH4W Multi L with N <ul style="list-style-type: none"> • Number of CTs <ul style="list-style-type: none"> ◦ (2) Two CTs on I1 I2 ◦ (3) Three CTs • Number of VTs <ul style="list-style-type: none"> ◦ (0) Direct Connect 	<p>Step 1: Select this when the meter is wired to measure multiple loads on a single-phase line-to-neutral power system, and then click Next.</p> <p>Step 2: Choose the Number of CTs and Number of VTs from the Set System Options, and then click Finish.</p>
CT Primary	1 to 32767 (Default: 100)	Enter the size of the CT primary, in Amps.
CT Secondary	1 Amp 5 Amp (Default: 1000 mV)	Select the size of the CT secondary, in millivolts.
VT Primary	1 to 1000000	Enter the size of the VT primary, in Volts.

Parameter	Options	Description
	(Default: 100)	
VT Secondary	100 Volts 110 Volts 115 Volts 120 Volts (Default: 100 Volts)	Select the size of the VT secondary, in Volts.
Nominal Frequency	50 Hz 60 Hz (Default: 60 Hz)	Select the frequency of the electrical power system, in Hertz.

- Click **OK**, and then click **Send** to save your changes to the meter.

NOTE: When changes are not saved to the meter, the status bar on the bottom left screen shows **Download Incomplete**.

Configuring the clock parameters (Date/Time)

Configure the date and time of the internal clock of a device and synchronize the date and time of the devices in your system with your workstation using the **Clock** screen.

NOTE: When the power to your device is interrupted, you might see a dialog that prompts you to reset the date and time.

- Double-click on **Clock** to open the dialog showing the list of parameters.
- Select a parameter and click **Edit** to open its specific setup dialog.

Parameters	Options	Description
Device	Meter Date Meter Time	Select the meter date and time. NOTE: The Device changes to Update to and shows the date and time that will be sent to the meter.
Sync to	UTC (Universal Coordinated Time) <ul style="list-style-type: none"> Device time zone: Not applicable 	UTC is the same as Greenwich Mean Time (GMT). Daylight Saving Time and time zones do not apply to UTC.
	PC Standard Time (No DST) <ul style="list-style-type: none"> Device time zone <ul style="list-style-type: none"> Same as this PC Behind this PC <ul style="list-style-type: none"> Time Offset Ahead of this PC <ul style="list-style-type: none"> Time Offset 	PC Standard Time is the time on your computer without Daylight Saving Time applied. If the meter you are programming is in a different time zone from your computer, select the appropriate time zone correction. Select the offset time in hours (0 to 23) and minutes (0, 15, 30, 45). For time zone ahead of this PC, the time is displayed with + sign (example: +6h45min) and time zone behind this PC, the time is displayed with - sign (example: -6h45min).
	PC Local Time (DST if applicable) <ul style="list-style-type: none"> Device time zone <ul style="list-style-type: none"> Same as this PC Behind this PC <ul style="list-style-type: none"> Time Offset Ahead of this PC <ul style="list-style-type: none"> Time Offset 	PC Local Time is the time on your computer with Daylight Saving Time applied. If the meter you are programming is in a different time zone from your computer, select the appropriate time zone correction. Select the offset time in hours (0 to 23) and minutes (0, 15, 30, 45). For time zone ahead of this PC, the time is displayed with + sign (example: +6h45min) and time zone behind this PC, the time is displayed with - sign (example: -6h45min).
	Synchronization Time	The synchronization time and date of the meter.

- Click **OK**, and then click **Send** to save your changes to the meter.

NOTE: When changes are not saved to the meter, the status bar on the bottom left screen shows **Download Incomplete**.

Configuring the meter resets

When you initialize a meter, it will reset or disable certain parameters. Make sure to read the warning message that appears, showing the parameters that are about to be reset.

1. Double-click on **Meter Resets** to open the dialog box.
2. Select **Reset All Energies** and click **Reset**.
3. Click **Proceed** to reset all Phase energy and Partial energy.

RS-485 Base Comm

Configure the Modbus RS-485 communication port settings for the EM3000 series devices. The RS-485 Base Comm port allows Modbus communications with a monitoring and control system, and you can link multiple devices in sequence in a system.

NOTE: We recommend that you do not change the communications settings of the device. If necessary, use the device display to change the device communications settings.

1. Double-click on **RS-485 Base Comm** to open the dialog box.
2. Select a parameter and click **Edit** to open its specific setup dialog.

Parameter	Options	Description
Address	1 to 247	Enter a value for the address (unit ID) of the device. The address must be unique for each device in a communications loop.
Baud Rate	9600 19200 38400	Select a value from the drop down list for the meter's baud rate (speed for data transmission). NOTE: The baud rate must be set to the same value for all devices in a communications loop.
Parity	Even Odd None	Select a value from the drop down list for the communications port parity setting. NOTE: That parity must be set to None for all devices to communicate with the ION Setup.

3. Click **OK**, and then click **Send** to save your changes to the meter.

Troubleshooting

Overview

The meter does not contain any user-serviceable parts. If the meter requires service, contact your local Schneider Electric representative.

NOTICE

RISK OF DAMAGE TO THE METER

- Do not open the meter case.
- Do not attempt to repair any components of the meter.

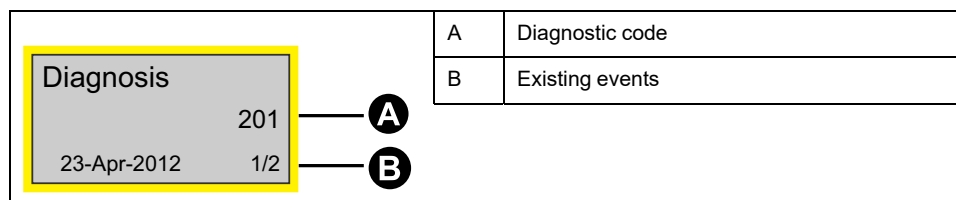
Failure to follow these instructions can result in equipment damage.

Do not open the meter. Opening the meter voids the warranty.

Diagnosis screen

The Diagnosis screen lists any current diagnostic codes.

NOTE: The Diagnosis screen only appears if there is a specific event.



1. Press the down button to scroll through the main display screens until you reach the **Diagnosis** screen.
2. Press the button to scroll through any existing events.

Diagnostic codes

If the combination of the backlight and the error / alert icon indicates an error or an abnormal situation, navigate to the diagnostics screen and find the diagnostics code. If the problem persists after following the instructions in the table, please contact Technical Support.

Diagnostic code ¹	Description	Possible solution
—	LCD display is not visible.	Check and adjust LCD contrast.
—	Push buttons do not respond.	Restart the meter by powering off and powering on again.
101	Metering stops due to an EEPROM error. Press OK to display total energy consumption.	Enter configuration mode and select Reset Config .
102	Metering stops due to a lack of a calibration table. Press OK to display total energy consumption.	Enter configuration mode and select Reset Config .
201	Metering continues.	Correct the frequency settings according to the nominal frequency of the power system.

1. Not all diagnostic codes apply to all devices.

Diagnostic code ²	Description	Possible solution
	Mismatch between frequency settings and frequency measurements.	
202	Metering continues. Mismatch between wiring settings and wiring inputs.	Correct the wiring settings according to wiring inputs.
203	Metering continues. Phase sequence reversed.	Check the wire connections and correct the wiring settings if needed.
204	Metering continues. Total active energy is negative due to incorrect voltage and current connections.	Check the wire connections and correct the wiring settings if needed.
205	Metering continues. Date and Time have been reset due to a loss of power.	Set the Date and Time.
206	Metering continues. Pulse is missing due to overload on energy pulse output.	Check the energy pulse output settings and correct if needed.
207	Metering continues. Abnormal internal clock function.	Restart the meter by powering off and powering on again then reset the date and time.

2. Not all diagnostic codes apply to all devices.

Specifications

Electrical characteristics

Power system inputs: EM3122

Characteristic	Value
Measured voltage	Wye: 100...277 V L-N, 173...480 V L-L $\pm 20\%$ Delta: 173...480 V L-L $\pm 20\%$
Maximum current	45 A
Measured current	0.5 A to 45 A
Overload	332 V L-N or 575 V L-L
Voltage impedance	3 M Ω
Current impedance	< 0.3 m Ω
Frequency	50 / 60 Hz $\pm 10\%$
Measurement category	III
Minimum wire temperature rating required	90 °C (194 °F)
Burden	< 10 VA at 45 A
Wire	16 mm ² / 6 AWG (Recommended: Copper wire with a compatible copper lug)
Wire strip length	11 mm / 0.43 in
Torque	1.8 Nm / 15.9 in·lb
Withstand	43 A continuous, 160 A at 10 sec/hr
Impulse voltage (Uimp)	6 kV for 1.2 μ s
Utilization category	UC1

Power system inputs: EM3212 / EM3224

Characteristic	Value
Measured voltage	Wye: 100...277 V L-N, 173...480 V L-L $\pm 20\%$ Delta: 173...480 V L-L $\pm 20\%$
Maximum current	63 A
Measured current	0.5 A to 63 A
Overload	332 V L-N or 575 V L-L
Voltage impedance	3 M Ω
Current impedance	< 0.3 m Ω
Frequency	50 / 60 Hz $\pm 10\%$
Measurement category	III
Minimum wire temperature rating required	90 °C (194 °F)
Burden	< 10 VA at 63 A
Wire	16 mm ² / 6 AWG (Recommended: Copper wire with a compatible copper lug)
Wire strip length	11 mm / 0.43 in
Torque	1.8 Nm / 15.9 in·lb

Characteristic	Value
Withstand	63 A continuous, 160 A at 10 sec/hr
Impulse voltage (Uimp)	6 kV for 1.2 μ s
Utilization category	UC1

Power system inputs: EM3322

Characteristic	Value
Measured voltage	Wye: 100...277 V L-N, 173...480 V L-L $\pm 20\%$ Delta: 173...480 V L-L $\pm 20\%$
Maximum current	100 A
Measured current	1 A to 100 A
Overload	332 V L-N or 575 V L-L
Voltage impedance	6 M Ω
Current impedance	< 0.2 m Ω
Frequency	50 / 60 Hz $\pm 10\%$
Measurement category	III
Minimum wire temperature rating required	105 °C (221 °F)
Burden	< 10 VA at 100 A
Wire	50 mm ² / 1 AWG (Recommended: Copper wire with a compatible copper lug)
Wire strip length	13 mm / 0.5 in
Torque	3.5 Nm / 30.9 in·lb
Withstand	100 A continuous, 320 A at 10 sec/hr
Impulse voltage	6 kV for 1.2 μ s
Utilization category	UC3

Power system inputs: EM3412 / EM3424

Characteristic	Value
Measured voltage	Wye: 100...277 V L-N, 173...480 V L-L $\pm 20\%$ Delta: 173...480 V L-L $\pm 20\%$
Maximum current	125 A
Measured current	1 A to 125 A
Overload	332 V L-N or 575 V L-L
Voltage impedance	6 M Ω
Current impedance	< 0.2 m Ω
Frequency	50 / 60 Hz $\pm 10\%$
Measurement category	III
Minimum wire temperature rating required	105 °C (221 °F)
Burden	< 10 VA at 125 A
Wire	50 mm ² / 1 AWG (Recommended: Copper wire with a compatible copper lug)

Characteristic	Value
Wire strip length	13 mm / 0.5 in
Torque	3.5 Nm / 30.9 in·lb
Withstand	125 A continuous, 320 A at 10 sec/hr
Impulse voltage	6 kV for 1.2 µs
Utilization category	UC3

Power system inputs: EM3712 / EM3724

Characteristic		Value
Voltage inputs	Measured voltage	Wye: 100...277 V L-N, 173...480 V L-L ±20% Delta: 173...480 V L-L ±20%
	Overload	332 V L-N or 575 V L-L
	Impedance	3 MΩ
	Impulse voltage (Uimp)	6 kV for 1.2 µs
	Frequency	50 / 60 Hz ±10%
	Measurement category	III
	Minimum wire temperature rating required	90 °C (194 °F)
	Burden	< 10 VA
	Wire	2.5 mm ² / 14 AWG (Recommended: Copper wire)
	Wire strip length	8 mm / 0.31 in
	Torque	0.5 Nm / 4.4 in·lb
Current inputs	Nominal current	1 A or 5 A
	Measured current	20 mA to 6 A
	Withstand	10 A continuous, 20 A at 10 sec/hr
	Minimum wire temperature rating required	90 °C (194 °F)
	Impedance	< 1 mΩ
	Frequency	50 / 60 Hz ±10%
	Burden	< 0.036 VA at 6 A
	Wire	6 mm ² / 10 AWG (Recommended: Copper wire)
	Wire strip length	8 mm / 0.31 in
	Torque	0.8 Nm / 7.0 in·lb

Pulse outputs

Characteristic		Value	Meters
Pulse output	Number	1	EM3212 / EM3412 / EM3712
	Pulses / kWh	Configurable	
	Voltage	5...30 V DC	
	Current	1...15 mA	

Characteristic		Value	Meters
	Pulse width	Configurable Minimum width is 50 ms	
	Isolation	3.75 kV rms	
	Wire	2.5 mm ² / 14 AWG	
	Wire strip length	7 mm / 0.28 in	
	Torque	0.5 Nm / 4.4 in·lb	

Mechanical characteristics

Characteristic	Value		Meters
IP degree of protection	Front panel	IP40	EM3100 / EM3200 / EM3300 / EM3400 / EM3700 series
	Meter body	IP20	EM3100 / EM3200 / EM3700 series
	Meter body except bottom wiring surface	IP20	EM3300 / EM3400 series
Impact rating	IK08		EM3100 / EM3200 / EM3300 / EM3400 / EM3700 series
Active energy display range	In kWh or MWh up to 99999999 MWh		EM3700 series
	In kWh: 8 + 1 digits up to 99999999.9		EM3100 / EM3200 / EM3300 / EM3400 series
Energy pulsing LED (yellow ²)	500 imp/kWh		EM3100 / EM3200 series
	5000 imp/kWh without consideration of transformer ratios		EM3700 series
	200 imp/kWh		EM3300 / EM3400 series

Environmental characteristics

Safety, EMI/EMC and product standards

Safety	BS/ EN/ IEC/ UL 61010-1: 2010 + A1: 2019 BS/ EN/ IEC/ UL 61010-2-030: 2017	
Protective class	II Double insulated for user accessible parts	
Standard compliance	IEC 62052-31: 2015 IEC 62052-11: 2020 IEC 62053-21: 2020 IEC 61557-12: 2021	BS/ EN 62052-31 BS/ EN 62052-11 BS/ EN 62053-21 BS/ EN 61557-12 BS/ EN 50470-1 BS/ EN 50470-3

2. The pulses / kWh of the energy pulsing LED cannot be changed.

Measurement accuracy

Characteristic		Value	Meters
45 A	Active energy	Class 1 conforming to BS/ EN/ IEC 62053-21 and BS/ EN/ IEC 61557-12 (PMD DD): $I_{\max}=45$ A, $I_b=10$ A, and $I_{st}=0.04$ A	EM3122
63 A	Active energy	Class 1 conforming to BS/ EN/ IEC 62053-21 and BS/ EN/ IEC 61557-12 (PMD DD): $I_{\max}=63$ A, $I_b=10$ A, and $I_{st}=0.04$ A	EM3212
		Class B conforming to BS/ EN 50470-3: $I_{\max}=63$ A, $I_{ref}=10$ A, $I_{min}=0.5$ A, and $I_{st}=0.04$ A	EM3224
100 A	Active energy	Class 1 conforming to BS/ EN/ IEC 62053-21 and BS/ EN/ IEC 61557-12 (PMD DD): $I_{\max}=100$ A, $I_b=20$ A, and $I_{st}=0.08$ A	EM3322
125 A	Active energy	Class 1 conforming to BS/ EN/ IEC 62053-21 and BS/ EN/ IEC 61557-12 (PMD DD): $I_{\max}=125$ A, $I_b=20$ A, and $I_{st}=0.08$ A	EM3412
		Class B conforming to BS/ EN 50470-3: $I_{\max}=125$ A, $I_{ref}=20$ A, $I_{min}=1$ A, and $I_{st}=0.08$ A	EM3424
for x/1A current input	Active energy	Class 1 conforming to BS/ EN/ IEC 62053-21 and BS/ EN/ IEC 61557-12 (PMD SD / PMD Sx): $I_{\max}=1.2$ A, $I_n=1$ A, and $I_{st}=0.002$ A	EM3712
		Class B conforming to BS/ EN 50470-3: $I_{\max}=1.2$ A, $I_n=1$ A, $I_{min}=0.01$ A, and $I_{st}=0.002$ A	EM3724
for x/5A current input	Active energy	Class 0.5S conforming to BS/ EN/ IEC 62053-22 and BS/ EN/ IEC 61557-12 (PMD SD / PMD Sx): $I_{\max}=6$ A, $I_n=5$ A, and $I_{st}=0.005$ A	EM3712
		Class C conforming to BS/ EN 50470-3: $I_{\max}=6$ A, $I_n=5$ A, $I_{min}=0.05$ A, and $I_{st}=0.005$ A	EM3724

MID/MIR

Characteristic	Value	Meters
Electromagnetic environmental class	E2	EM3224 / EM3424 / EM3724
Mechanical environmental class	M1	


For MID/MIR compliance, the **Wiring > Type** setting must be set to **3PH4W** or **1PH4W** (Total energy).

The meter complies with the MID 2014/32/EU or MIR SI 2016 No 1153 when installed in cabinets rated for IP51 or better in accordance with the instructions in DOCA0038EN, available on our website. The CE and UKCA declaration documents are available from the website. Search ECDEM3000 for CE declaration document and UKMIREM3000 for UKCA declaration document.

Internal clock

Characteristic	Value	Meters
Type	Quartz crystal based Backup by super capacitor	EM3224 / EM3424 / EM3724
Time error	< 2.5 s/day (30 ppm) at 25 °C (77 °F)	
Backup time	3 days at 25 °C (77 °F)	

Modbus communications

Characteristic	Value	Meters
Number of ports	1	EM3122 / EM3224 / EM3322 / EM3424 / EM3724
Labels	0V, D0/-, D1/+,  (shield)	
Parity	Even, Odd, None	
Baud rate	9600, 19200, 38400	
Isolation	4.0 kV rms	
Wire	2.5 mm ² / 14 AWG shielded twisted pair	
Wire strip length	7 mm / 0.28 in	
Torque	0.5 Nm / 4.4 in·lb	

China Standard Compliance

This product complies with the following standards in China:

EM3100 / EM3200 series

BS/ EN/ IEC 62053-21 Electricity metering equipment (a.c.) - Particular requirements - Part 21:
Static meters for active energy (classes 1 and 2)

BS/ EN/ IEC 61557-12 Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1
500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 12:
Performance measuring and monitoring devices

EM3300 / EM3400 series

BS/ EN/ IEC 62053-21 Electricity metering equipment (a.c.) - Particular requirements - Part 21:
Static meters for active energy (classes 1 and 2)

BS/ EN/ IEC 61557-12 Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1
500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 12:
Performance measuring and monitoring devices

EM3700 series

BS/ EN/ IEC 62053-22 Electricity metering equipment (a.c.) - Particular Requirements - Part 22:
Static meters for active energy (classes 0,2 S and 0,5 S)

BS/ EN/ IEC 61557-12 Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1
500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 12:
Performance measuring and monitoring devices

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As standards, specifications, and design change from time to time,
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